PENANG SANGAM HIGH SCHOOL
P.O.BOX 44, RAKIRAKI
LESSON NOTES

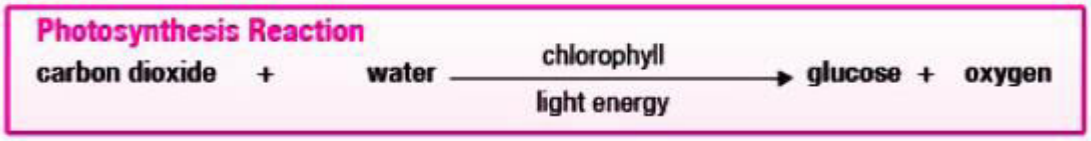
Subject: Biology **Year/Level:** 11

Week 14

Strand	1 Structure and Life Processes
Sub Strand	1.5 Structure And Functions In Plants
Content Learning Outcome	Discuss nutrition and its uses in plants

NUTRITION IN PLANTS

- All plants are autotrophic.
- They manufacture their own food by a process called **photosynthesis.**
- The process of converting inorganic compound (CO_2 and H_2O) into chemical energy is known as photosynthesis.



Chemical Equation:

- Glucose made in the leaves during photosynthesis is converted to **starch** and transported to roots for storage (as it is insoluble in nature).
- The presence of starch in leaves is an evidence of photosynthesis.
- When photosynthesis stops the starch in leaves is hydrolysed back to sugars.

Glucose and Its Use

- When rate of photosynthesis is high a lot of glucose is made. The glucose is used as follows:
  a) Some are used to produce energy in the leaves and flowers through **respiration** reaction for growth.
  b) Some diffuse into phloem tubes and carried to roots for growth and forming proteins by combining with absorbed nitrates.
  c) Some form the cellulose and lignin. Cellulose forms the cell wall and lignin strengthens the cell wall.
  d) Excess glucose is stored in the leaves, stems, roots and fruits as starch.

Starch and Their Use

- Plants also use starch for body building, growth and repair and obtaining energy.
- With the help of oxygen, glucose breaks down into CO_2, H_2O and ATP. This energy is used by plants while some may be lost to the environment as heat.
- This occurs in all living cells (plant/animal).

Respiration reaction:

Glucose + Oxygen ⟶ Carbon dioxide + water + energy.

Intake of substances required for photosynthesis

Materials	**Method of intake**	**The next stage**
Light	Light is absorbed by chlorophyll present in the chloroplast	Light energy is changed into chemical energy
Water	Absorbed by roots, travels up the xylem to the stem, into the leaves	Water is split to provide hydrogen atoms. Oxygen is released
Carbon dioxide	Diffuses from the atmosphere into the leaves through the stomata	CO_2 combines with hydrogen from water to form glucose in a series of reaction.

Activity

1. What does the term "autotroph" mean to you?

   _____

   _____

2. Why is glucose converted to starch in plants?

   _____

   _____

3. What is the importance of respiration reaction in plants?

   _____

   _____

4. Name the process by which starch can be converted back to sugar. _____

5. List three uses of starch and three uses of glucose in plants.

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