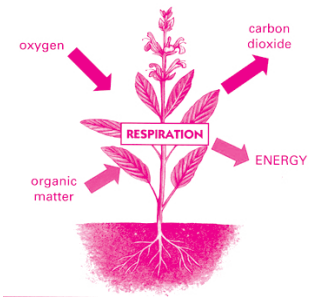

UNIT IV : PLANT PHYSIOLOGY

9. RESPIRATION IN PLANTS

1OMQ+1 LAQ [1M+ 8 M=9M]

ROOT POINTS

1. **Respiration** provides energy to the plant body. It is done by the oxidation of food.
2. **Main contents of this chapter :** i) Breathing of plants ii) Glycolysis iii) Fermentation iv) Aerobic respiration v) Respiratory balance sheet vi) Ampobilic pathway vii) Respiratory quotient.
3. The compounds that are oxidised during respiration are known as **respiratory substrates.**
4. **Glucose** is the favoured substrate for respiration.
5. All the energy contained in a respiratory substrate does not release freely into the cell, but it is trapped as a chemical energy in the form of **ATP.**
6. The **energy trapped** in ATP is utilised in various energy requirements of the organism.
7. In plants respiration happens in two ways.
   (i) **Gaseous exchange** through Stomata and Lenticels (ii) **Cellular respiration**
8. **Cellular respiration** is of two types (i) aerobic respiration (ii) anaerobic respiration.
9. Respiration in the presence of oxygen is called **aerobic respiration.**
   Ex: Glycolysis, Kreb's cycle.
10. Respiration in the absence of oxygen is called **anaerobic respiration. Ex:** Fermentation
11. **Glycolysis:** [LAQ]
    (i) Glycolysis is the first step of **respiration** in all living organisms.
    (ii) It occurs in cytoplasm of cells.
    (iii) During Glycolysis, Glucose molecules break down to **release energy.**
    (iv) Glycolysis is the **oxidation** of one glucose molecule to form 2 molecules of pyruvic acid.
12. **Kreb's Cycle:** [LAQ]
    (i) Kreb's cycle is a cycle of reactions used by all aerobic organisms to generate energy.
    (ii) It takes place in mitochondria.
    (iii) Acetyl coenzyme (CoA) is oxidised to form CO_2 and H_2O.
    (iv) Also, ADP is converted into **energy-rich** ATP.
13. Cytochromes are found in **cristae of mitochondria.** [NEET-2015]
14. In mitochondria, protons accumulate in the **intermembrane space.** [2011 PMT]
15. Aerobic respiratory pathway is appropriately termed **amphibolic.** [2009 PMT]
16. **Respiratory Quotient** (RQ) Value of **Tripalmitin is "0.7".** [NEET-2019]
17. In the conversion of glucose to glucose – 6 – phosphate, the first irreversible reaction of glycolysis, is catalysed by **Hexokinase** [NEET-2019]
18. The number of substrate level phosphorylation in one turn of citric cycle is **one**. [NEET-2020]
19. The complex II of mitochondrial electron transport chain is als known as **Succinate dehydrogenase** [NEET-2025]