## Life Processes

## **Respiration in Plants**

## **RESPIRATION IN PLANTS:**

Like other living organisms, plants also exchange gases with their environment. However, plants do not posses any transport system for the gases. Different parts of plants exchange gases independently. The gases move entirely by diffusion.

In respiration is rapid in meristematic regions (stem tips, root tips, cambia), floral buds, growing fruitsand germinating seeds. It is slower in mature regions.

(a) Young Roots :- Air occurs in soil interspaces. Root hairs as well as epiblem cells of the young roots are in contact with them Carbon dioxide produced by root cells diffuses in the opposite direction. In water-logged conditions, soil airbecomes deficient. In the absence of oxygen, metabolic activity of the root declines and the plant may wither.



Figure : Epiblema and root hair take part inexchange of gases directly in young roots

- (b)Older Roots and Stems :- In older roots and stems, the surface tissues are impermeable to gases. They have permanently open pores called lenticels. Each lentical contains a mass of loosely aragedcomplementary cells that enclose a number of intercellular spaces. Exchange of gases occurs through them.
- (c) Leaves and Young Stems :- Leaves and young stems are ideally suited to quick exchange of gases. The organs have a covering of nearly impermeable epidermis for reducing loss of water. The epidermis bears a number of aerating pores called stomata. Each aerating or stomatal pore isbordered by a pair of guard cells. In most of the plants, the guard cells are kidney or bean shapedwith inner walls

being thicker and less elastic then the outer walls. Guard cells contain chloroplastswhich are absent in other epidermal cells. Opening and closing of stomata are regulated.





Figure: Section of leaf to show intercellular spaces and stomata.