



Lecture No- 2

Date: - 05th Aug 20

TOPIC: - PLANT PHYSIOLOGY- Transpiration- II

Subsidiary Part II, Group – C

STOMATAL APPARATUS – Typically the stomatal apparatus consists of a minute pore surrounded by a pair of specialized kidney-shaped epidermal cells called guard cells. Some times (subsidiary cells) occur adjacent to the guard cells.

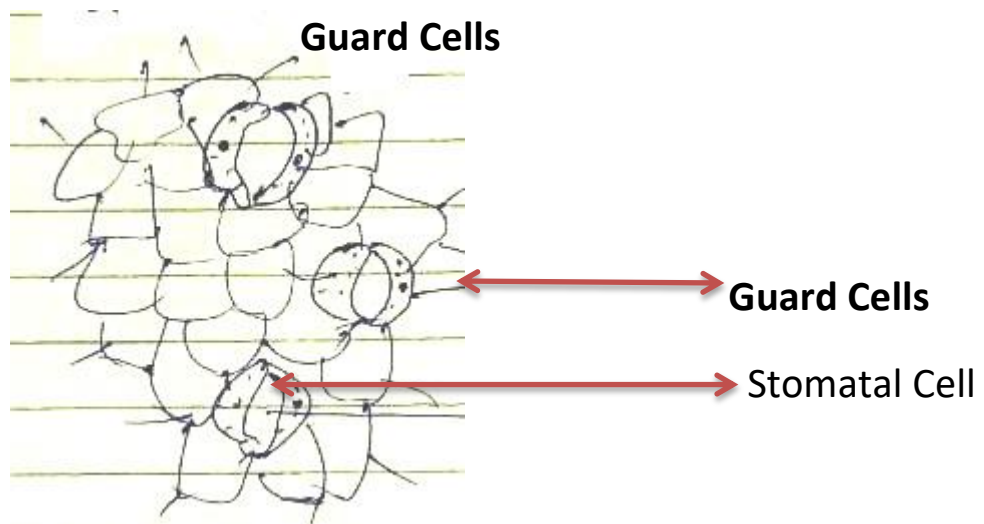


Fig :- Epidermal peel of leaf showing stomata.

Each guard cell has dense cytoplasm with a prominent nucleus and numerous chloroplasts. It differs from the subsidiary cells.

Five categories of stomata have been classified in plants on the basis of their position and distribution on the two surfaces of the leaf.

- (i) Apple and mulberry type stomata on under surface only:- Apple, Peach, Walnut and mulberry etc.
- (ii) Potato type:- Stomata more and under surface than the upper one potato, cabbage, pea, bean, tomato etc.



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- (iii) Oat type:- Stomata almost equally distributed on both surfaces. E.g. Maize, Oats, Grasses etc
- (iv) Water lily type:- Stomata only on the upper surface e.g- nymphaea water lily and other aquatic plants.
- (v) Potamogeton type:- Stomata altogether absent or if present they are functionless. E.g. potamogeton and many such submerged aquatic plants.

Von Mohl (1856) prepared the stomatal clock (daily duration of opening and closing) and Loftfield classified the stomata into 3 main groups on the basis of their daily movement. These are –

- (i) Alfalfa type:- The stomata remains open throughout the day and night e.g- pea bean, radish, mustard etc.
- (ii) Potato type:- The stomata remains open throughout the daily cycle but closes only for a few hours in the evening. E.g.- onion, cabbage, pumpkin etc
- (iii) Barley type:- The stomata opens only for a few hours in the day. E.g- Barley and all other cereals.