PHLOEM

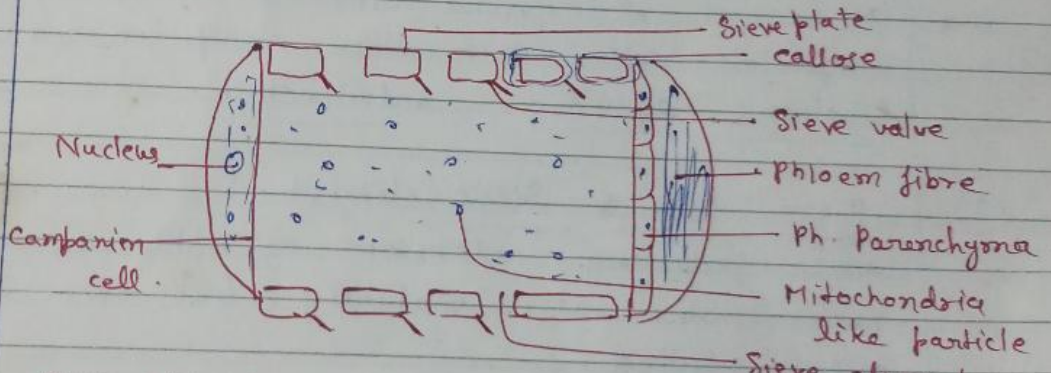
→ Phloem is another types of vascular tissue responsible for transpotation of organic food in highes plants mainly.

→ They are food conducting tissue & physiologically related with translocation of organic solute

→ These are 4- element in phloem, out of which 3 -are living & 1 is dead & Non-living.

(1) Phloem sieve tubes (L)
(2) Companion cell (L)
(3) Phloem parenchyma (L)
(4) " fibre (Sclerenchyma) (D).

Before going in detail about the element of phloem, it is better to mark the phloem plugging.



PHLOEM PLUGGING →

→ Popularly known as callose. This is actually the deposition of carbohydrate along with some protein around the area of sieve plate to block the sieve pore, so that the movement of sieve valve is checked.

In such condition the total phloem is blocked & no chance for translocation of organic solute i.e. plant start wilting.

→ The protein found in callose is called P-protein.

Element of phloem → Out of 4- elements it is mainly the sieve tubes responsible for translocation ~~solub~~ solute.

(1) Companion cells :- They are specialized type of parenchyma having additional capacity of storing food. So, act like Idioblastic parenchyma.

→ The solitary & long companion cells occur in prim. phloem & herbaceous plants, where as numberous companion cells occurs in the sec. phloem of woody plant.

→ In most of Angio. phloem contain companion cells, but some exceptions are - Dracaena, Drymis, Yucca, Aloe, Agave & Trichodendron.

→ In most of gymno. there is absent of companion cell, but the exception are:- Gnetum, Ephidra, Welwitschia.

(2) Sieve tube & Sieve element → Sieve elements are conducting element of phloem in which nucleus is at maturity but even then called living.

→ They contain some mitochondria like particle for releasing energy in form of ATP.

→ Sieve element may be segregated in form of sieve cells or sieve tubes.

→ Only in case of herbs & shrubs, where only one sieve cells is attached with single companion cell.

→ Sieve tube, is the term applicable in higher Angiospermic tree, where more than one sieve tube are attached with more than 1- companion cells.

In sieve cells unidirectional movement is marked, so they contain:- Sieve plate, Sieve pore & Sieve valve.

→ When food is prepared in leaf than, they are translocated in other part of the plant body from upper to lower end.

But when reverse direction is applied then valve will closed & translocation will be stop.

Considering the above fact the other element of phloem like phloem parenchyma & phloem fibre, they are the some function as recorded during simple permanent tissue.

After secondary growth phloem is called sec. phloem, which is reffered as bast. They appear in wood & totally crushed inside bark.