Study of Kranz Anatomy in C4 plant and Mangrove Adaptation

B. Sc. II Botany

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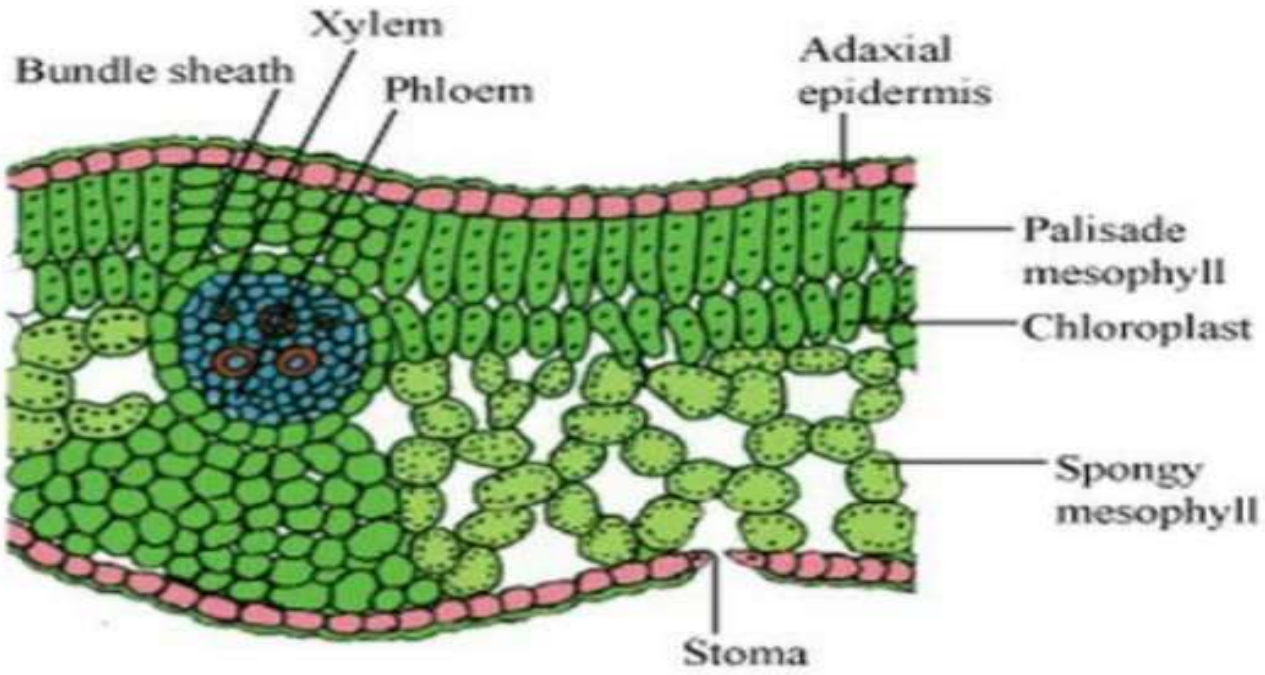
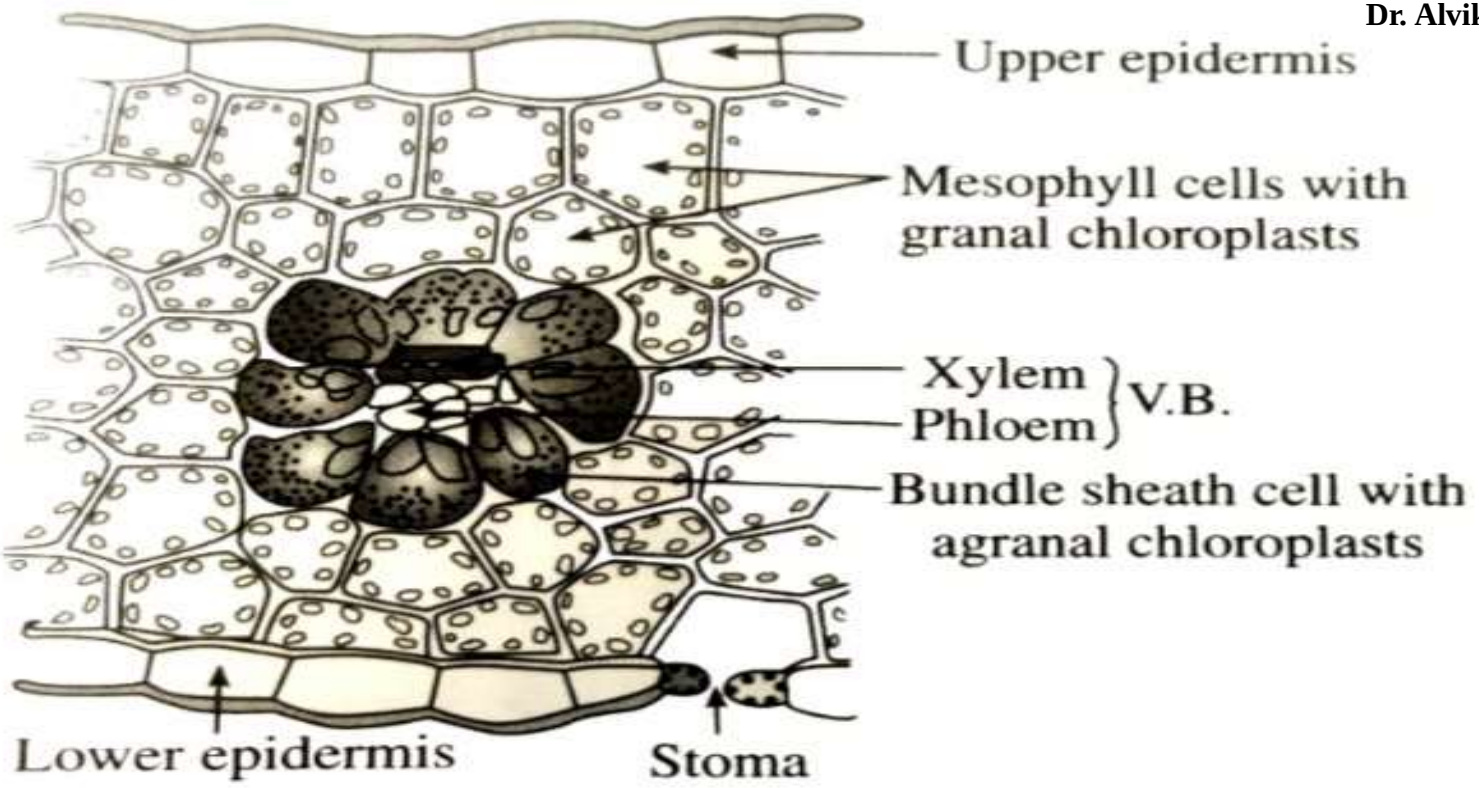
Study of Kranz anatomy in C4 plants



- C4 plants shows Kranz anatomy (Kranz means wreath or necklace).
- Leaves of C4 plants like ***Saccharum officinarum, Zea mays***
- In C4 plants leaves are isobilateral i.e. the mesophyll tissue is differentiated in to palisade and spongy tissue.



- The C4 plants shows chloroplast dimorphism i.e. two types of chloroplast.

- Each vascular bundle is surrounded by a ring or wreath of radially arranged large bundle sheath cells. These cells contain agranal chloroplasts i.e. chloroplasts without grana.

- **Bundle sheath chloroplast** - These chloroplasts are bigger in size, less in number and are with only stroma.

• **Mesophyll chloroplast** - The chloroplast in mesophyll cells contain granal chloroplasts.

• They are smaller in size more in number with abundant grana and very less stroma.

•They functions for light reaction of the photosynthesis.

• Due to presence of two types of stomata, C4 plants show double fixation of CO_2 i.e. first in mesophyll cells for the formation of C4 acids, later C4 acids get diffused into the bundle sheath cells where they are decarboxylated and removed CO_2 is again fixed or used in C3 cycle.

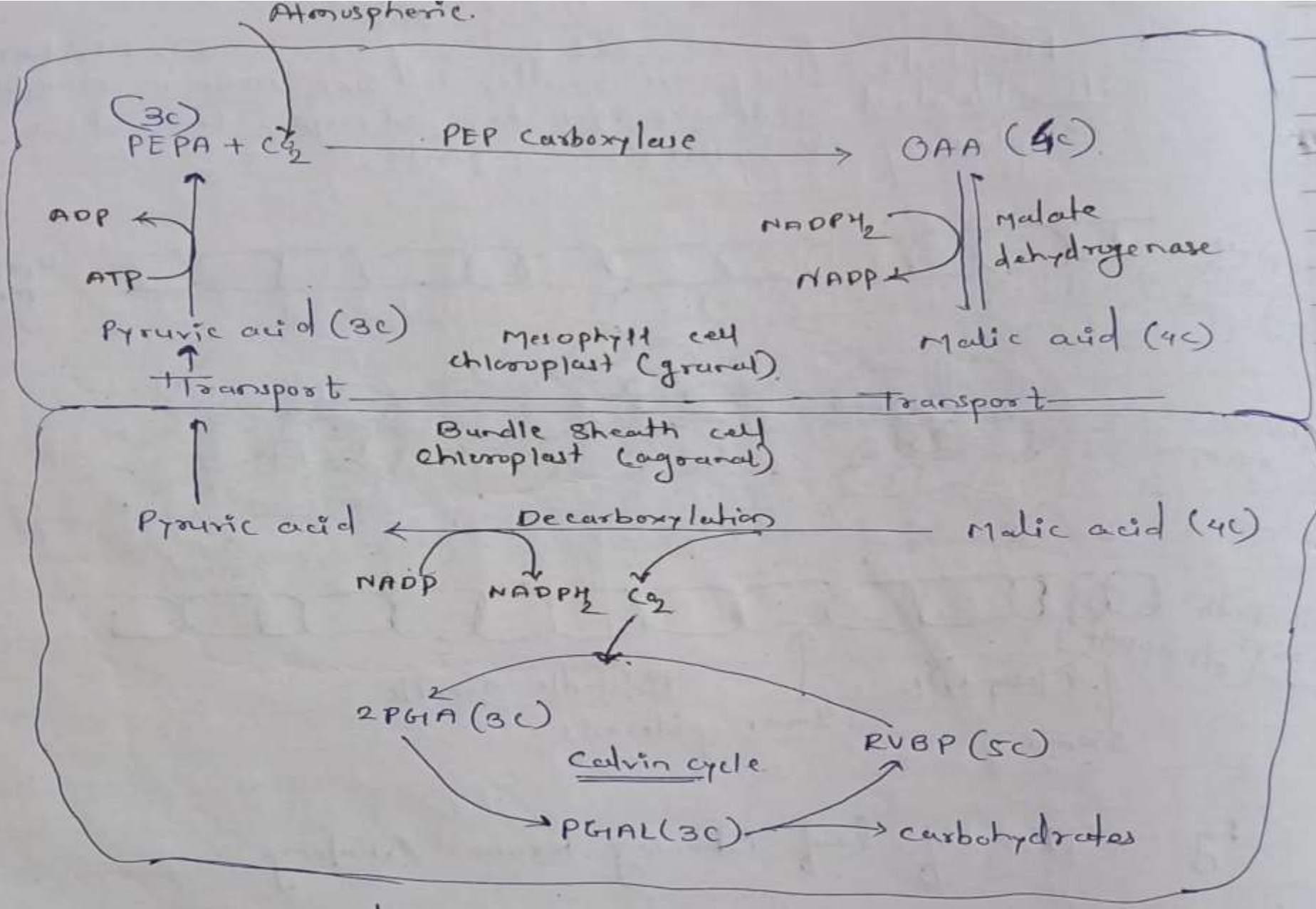
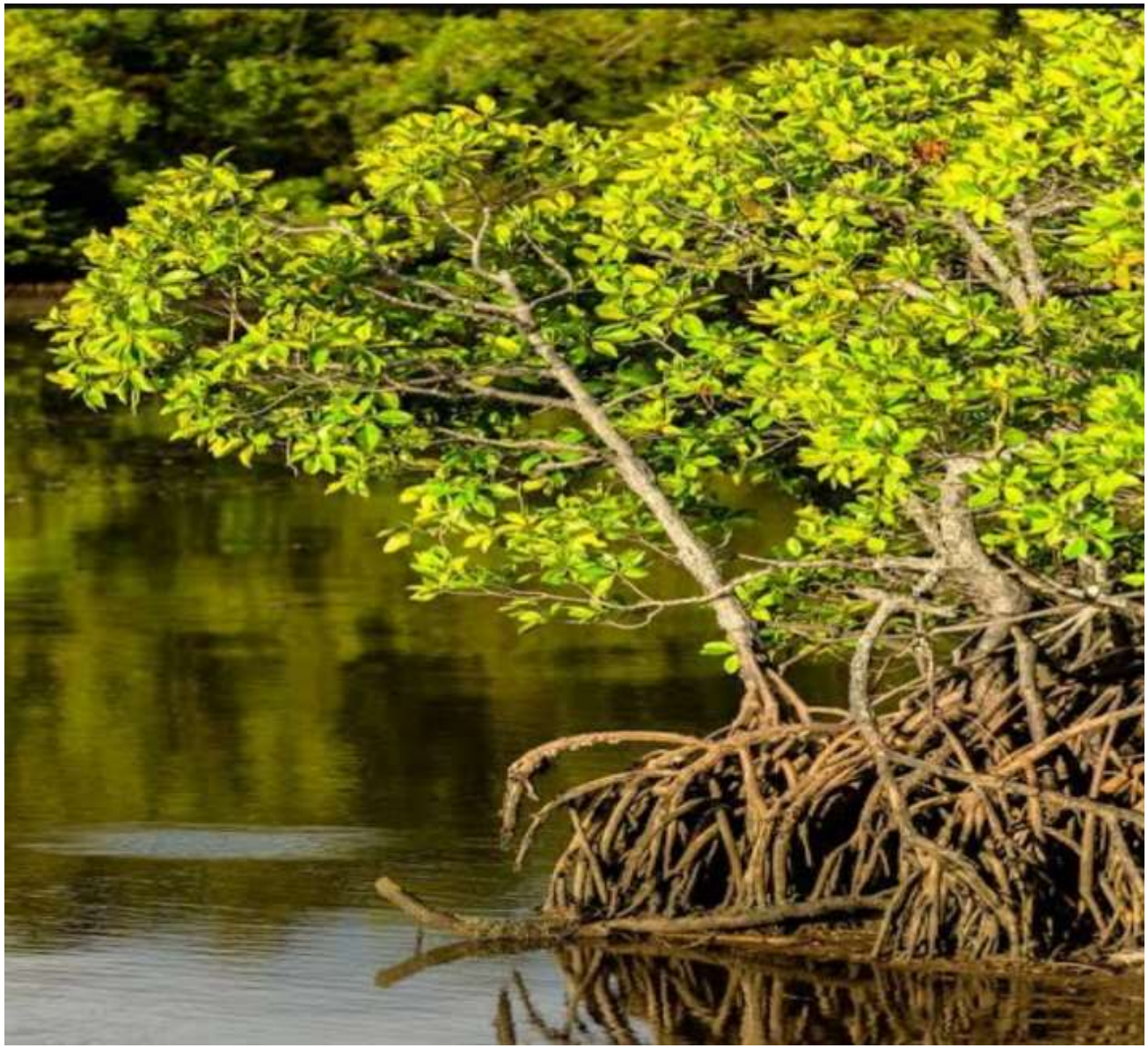


Fig - Diagrammatic representation of C4 / HSK pathway



Mangrove

Leaves of Mangrove

Salt glands on the surface of leaves

Prop Roots

Knee Roots