

PHOTOSYNTHESIS:UNIT- IV

Study Material for

B.Sc. Part III

Botany Hons.

Paper VI

and

B.Sc Part II (subsi)

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PHOTOSYNTHESIS UNIT-IV

- BIOSYNTHETIC PHASE
 - C₃ Pathway
 - C₄ Pathway
 - CAM Pathway

BIOSYNTHETIC PHASE

- The Whole process of Photosynthesis takes place in two distinct Phases; The Photochemical Phase and Biosynthetic Phase
- In Photochemical phase the **ASSIMILATORY POWER** is generated which is further utilized in Conversion of Carbon into form of carbohydrates
- This conversion takes place during low intensity of light, hence also known as **Dark reactions/ Carbon assimilation/ Carbon reactions of Photosynthesis**
- This stage is anabolic counterpart of Respiration; i.e. synthesis of carbohydrate from carbon dioxide
- This process is also known as **PHOTOSYNTHETIC ASSIMILATION** (occurs in green plants)
- The pathway of Photosynthetic assimilation can be studied through **C₃, C₄ and CAM Pathway**

PATHWAY OF CARBON ASSIMILATION

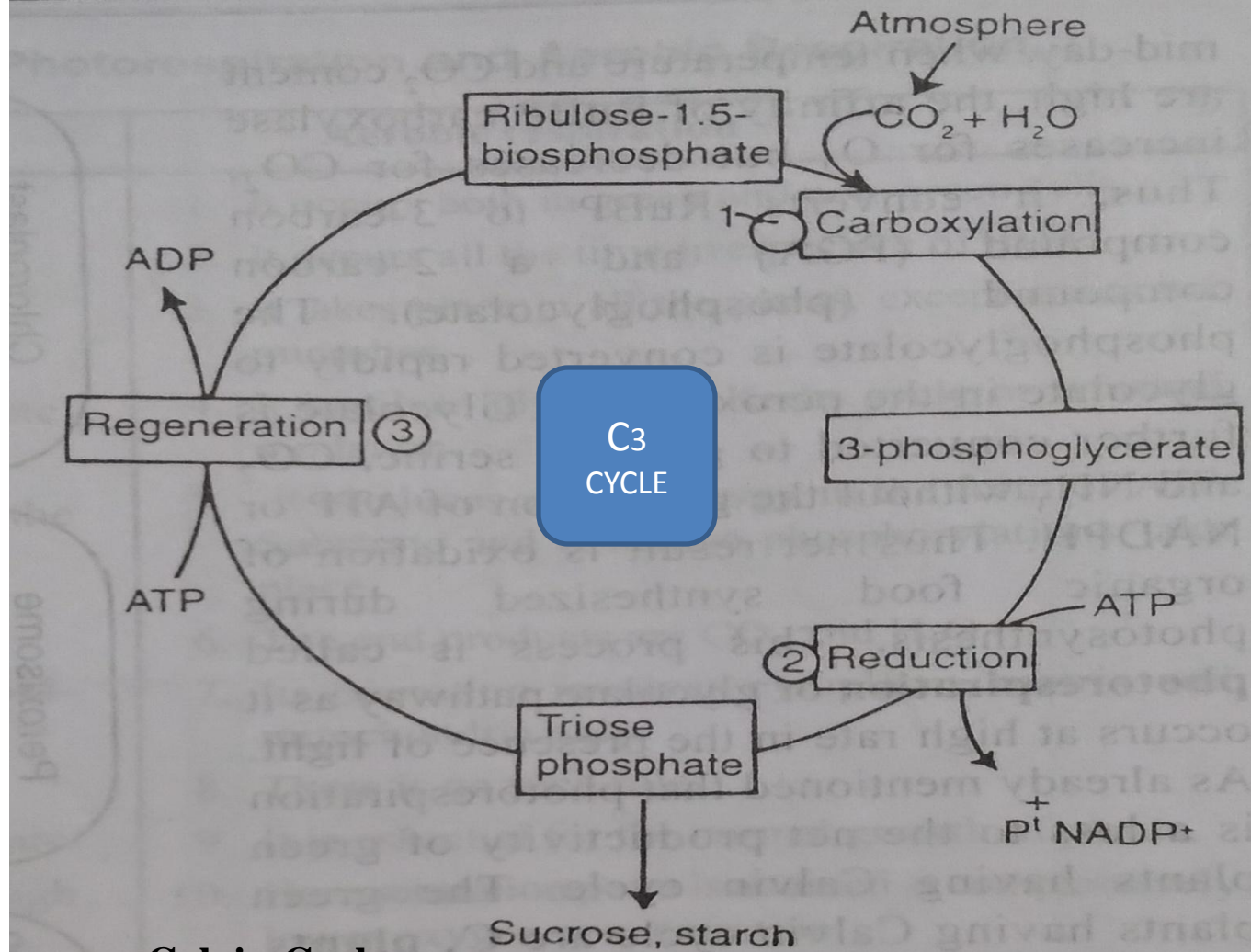


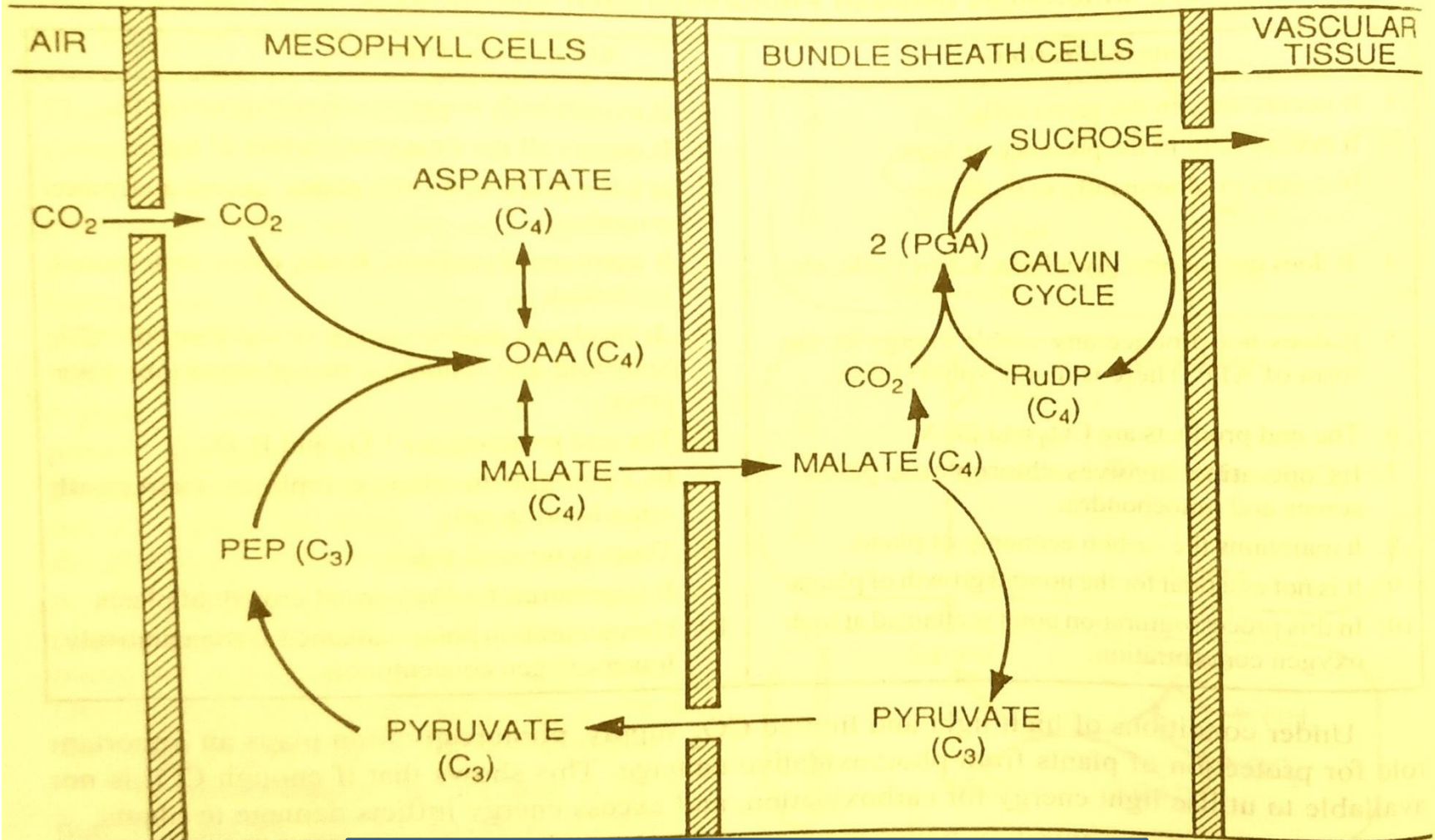
Fig. 5.9. Calvin Cycle.

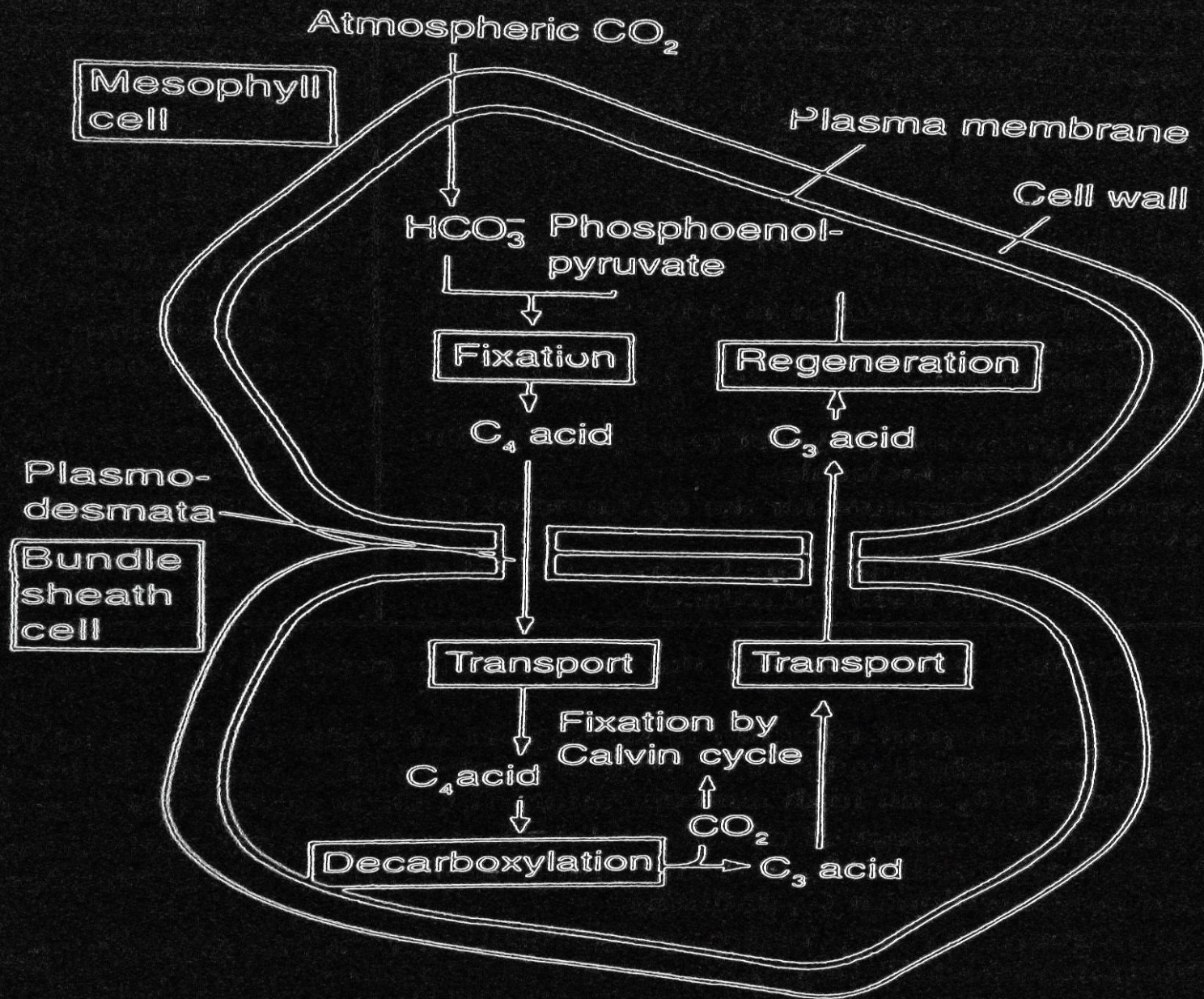
C₃ Pathway is also known as **Calvin Cycle**
It takes place in **Stroma of Chloroplast**

C₄- PATHWAY

- In Monocot plants the fixation of Carbon takes place in mesophyll cells
- The initial product being a 4-C compound, hence the pathway is called C₄ pathway
- Hatch and Slack (1966) discovered two types of chloroplasts in sugarcane
- C₄ pathway requires presence of two types of photosynthetic cells; mesophyll and bundle sheath cells
- The bundle sheath cells are arranged in wreath (KRANTZ) like manner; this type of arrangement of cells is called **“Krantz anatomy”**

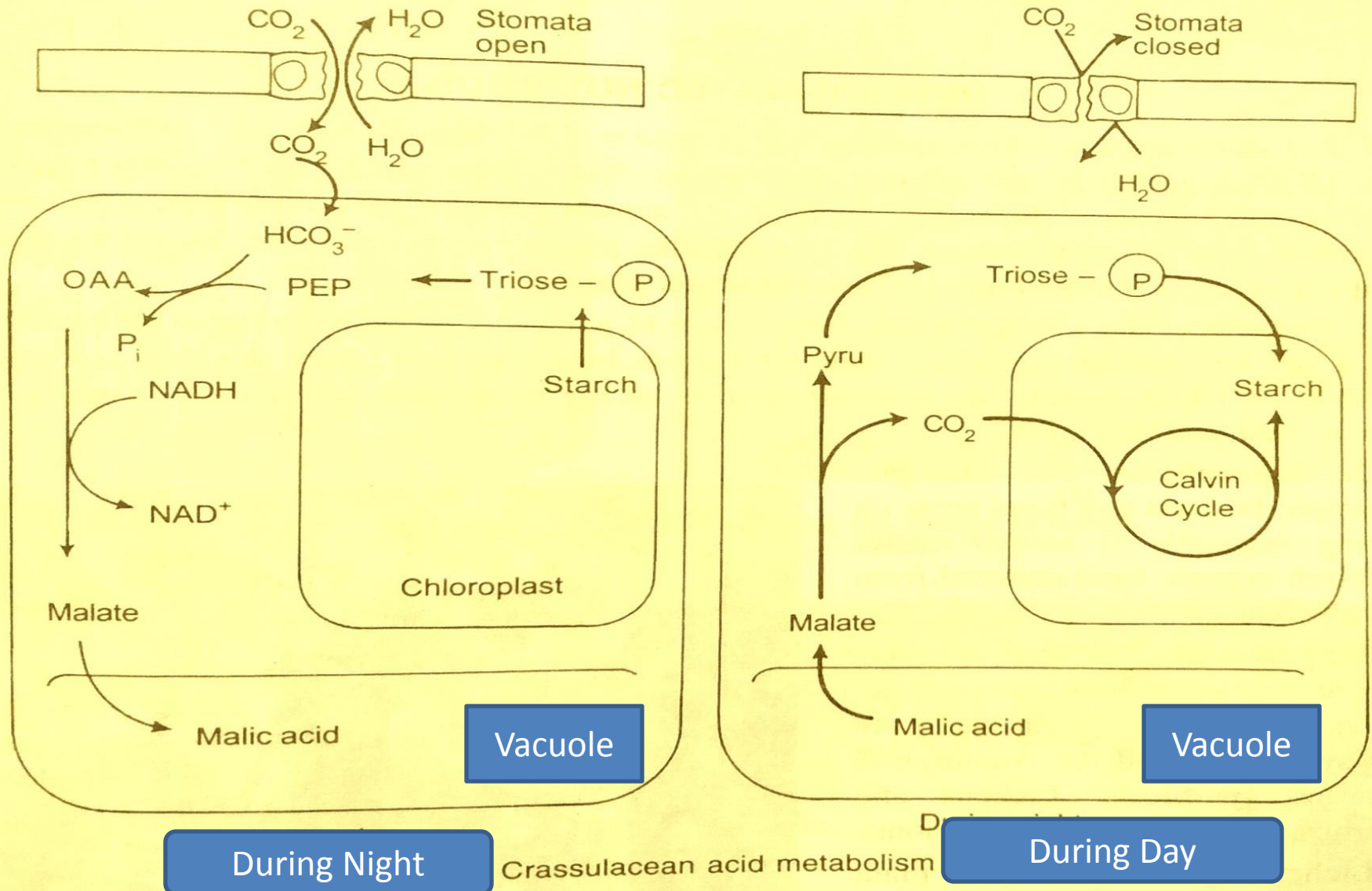
C₄ PATHWAY





C₄ Pathway

CAM-PATHWAY



PHOTOSYNTHESIS

- **Students are requested to share their queries on Whatsapp group: MMC Botany (D3)**

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