

Photosynthesis Notes

What happens when there is a hot, dry day and the plants partially close their stomata?

- Prevents _____ loss, but _____ can't get into the leaves
- Decrease in CO₂ levels in air space in leaves, which decreases _____ yield
- _____ starts to bind _____ to RuBP instead of CO₂
- New molecule splits and releases a 2-carbon compound
- Peroxisomes and mitochondria rearrange the compound and _____
- **Called _____ – no ATP as in cell respiration, and no sugar as in regular photosynthesis**

Why does Rubisco able to bind to O₂?

- Because the _____ had low levels of O₂, Rubisco enzyme didn't need to _____ O₂ from its active site
- Now, it retains the ability to bind to both CO₂ and O₂

Why is photorespiration still around?

- Plants who don't do it, have been shown to be _____ from excess light

How do some plants decrease photorespiration?

- Plants that do normal photosynthesis are called C₃ because the first compound made in the Calvin cycle is 3-carbon
 - o Ex: rice, wheat, soybeans
- Plants that have adapted photosynthesis are C₄ and CAM plants
 - o Works in times when _____ and will supply the Calvin cycle with the _____ to prevent Rubisco from binding to _____
 - o Ex: C₄ = sugarcane, corn, members of the grass family
 - o Ex: CAM = succulents such as cacti and pineapple

How plants modify carbon fixation?

C₃ Plants

- _____ photosynthesis

C₄ Plants

- Steps are separated spatially:

- CO₂ binds to PEP to make a 4-carbon oxaloacetate

CAM Plants (Crassulacean acid metabolism)

- Steps are separated temporally: _____
- Named for the plants that the process was discovered in
- CO₂ binds to PEP to make a 4-carbon malic acid