Photosynthesis

Turning sunlight, air, and water into pecans

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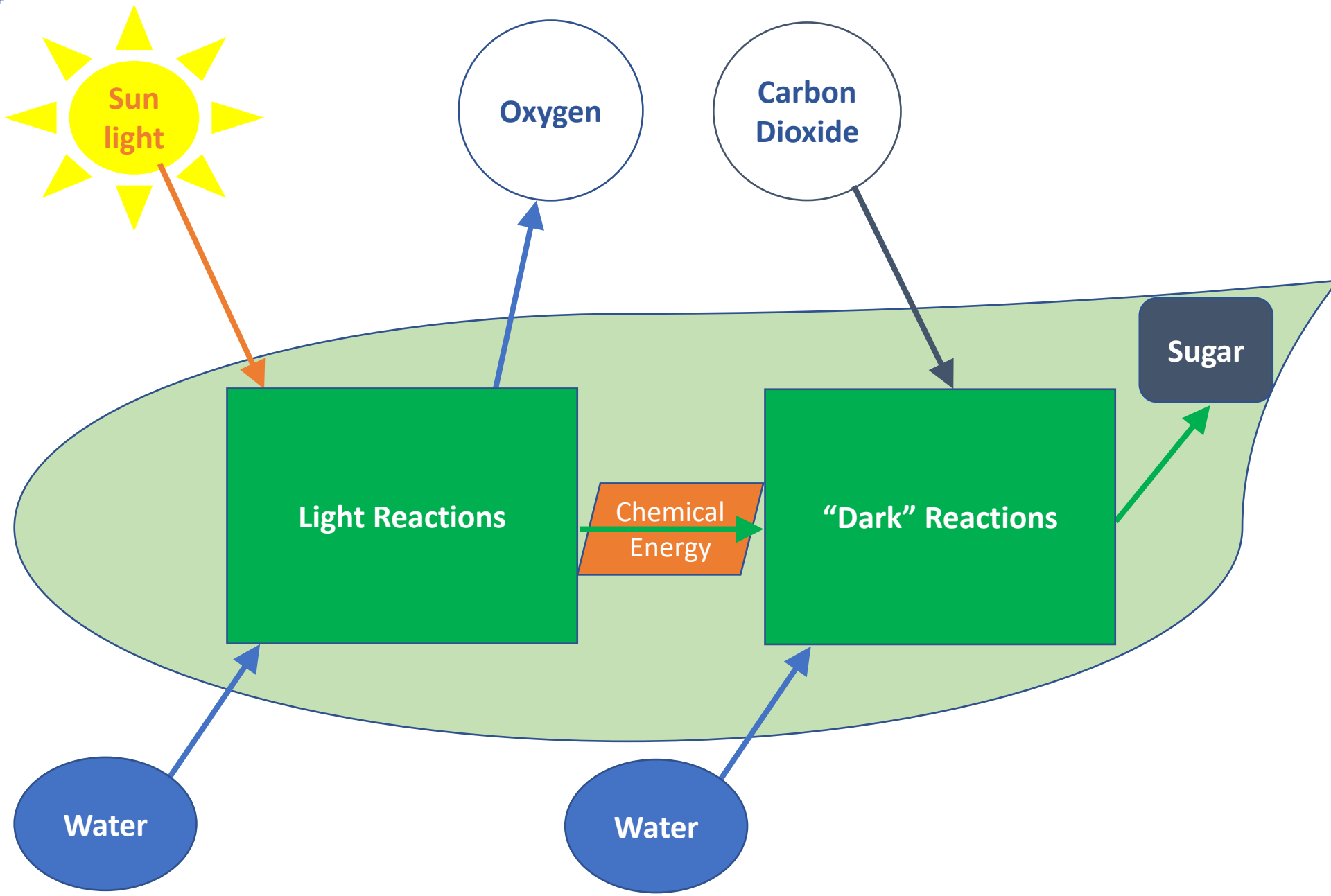
What does photosynthesis do?

- The final useful product of photosynthesis is sugar, which is **food** for the plant
  - **Building materials** for growth
  - **Energy** to use now or store for later

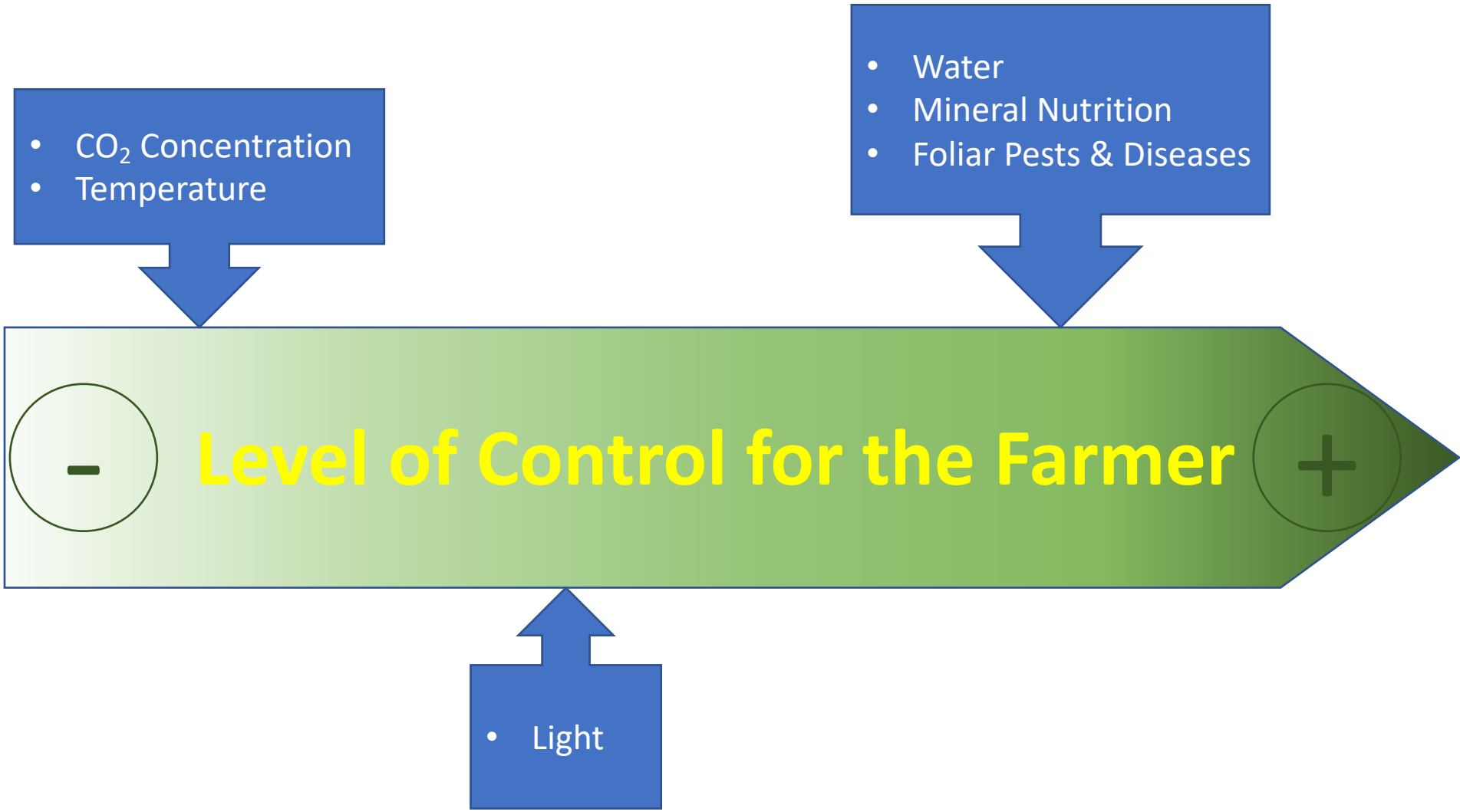
https://commons.wikimedia.org/wiki/File:Cuboid_sugar.jpg

How does photosynthesis work?

File:Photovoltaik Dachanlage Ha, November 28). *Wikimedia Commons, the free media repository.* Retrieved 22:35, June 1, 2018 from https://commons.wikimedia.org/w/index.php?title=File:Photovoltaik_Dachanlage_Hannover_-_Schwarze_Heide_-_1_MWnnover_-_Schwarze_Heide_-_1_MW.jpg.(2016.jpg&oldid=222669490.

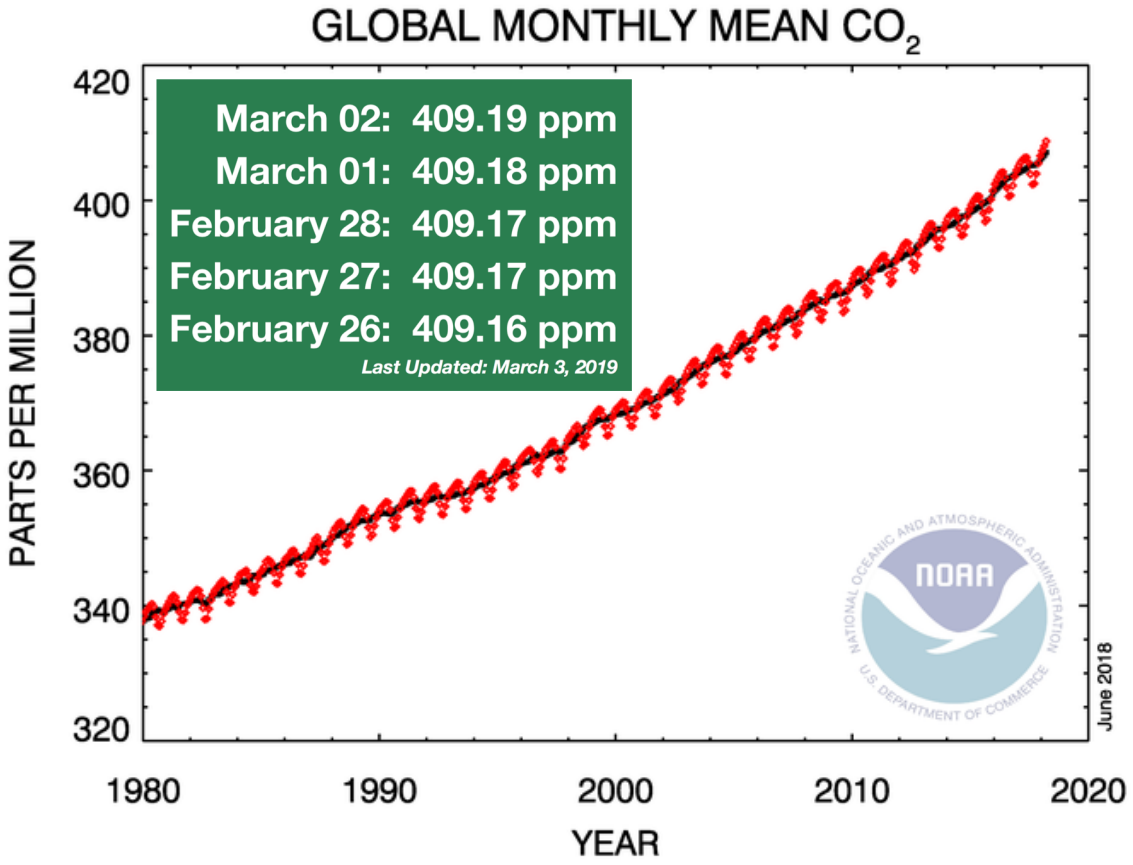

Sun light
Oxygen
Carbon Dioxide
Sugar
Light Reactions
Chemical Energy
"Dark" Reactions
Water
Water

Factors Affecting Photosynthesis



CO_2 Concentration

Pecan Pn could benefit from higher CO_2.

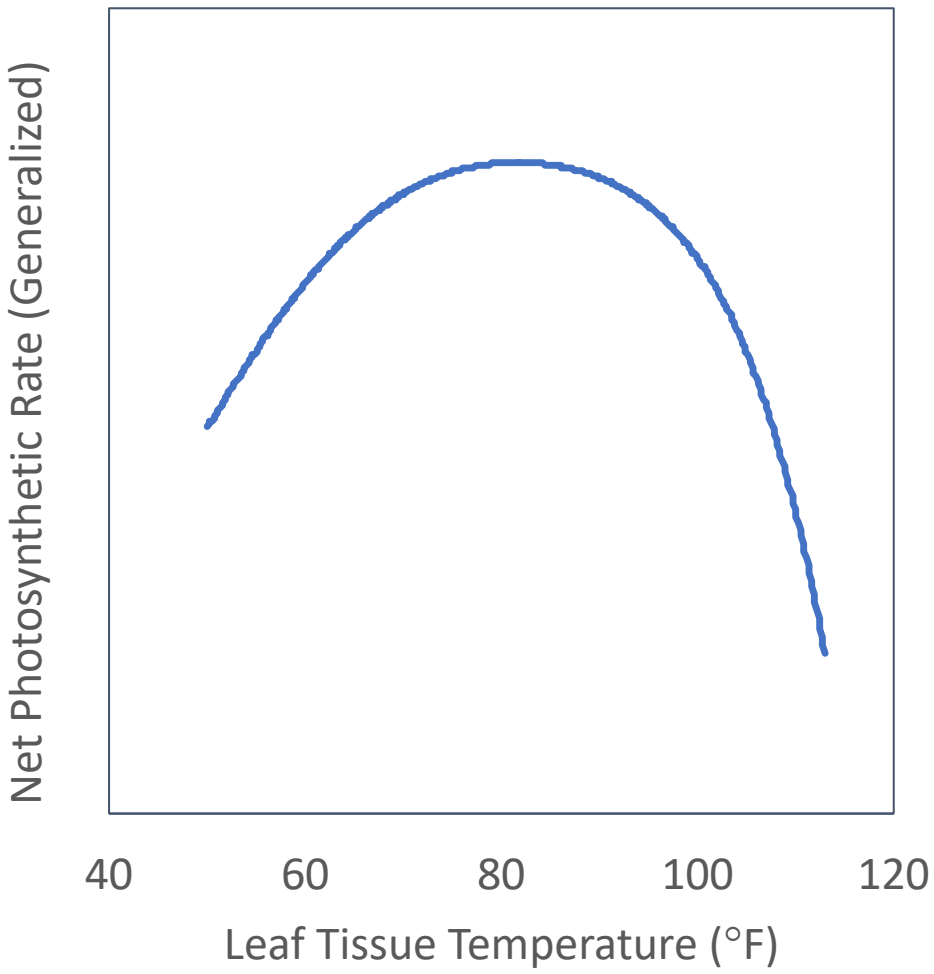


https://www.esrl.noaa.gov/gmd/ccgg/trends/gl_full.html

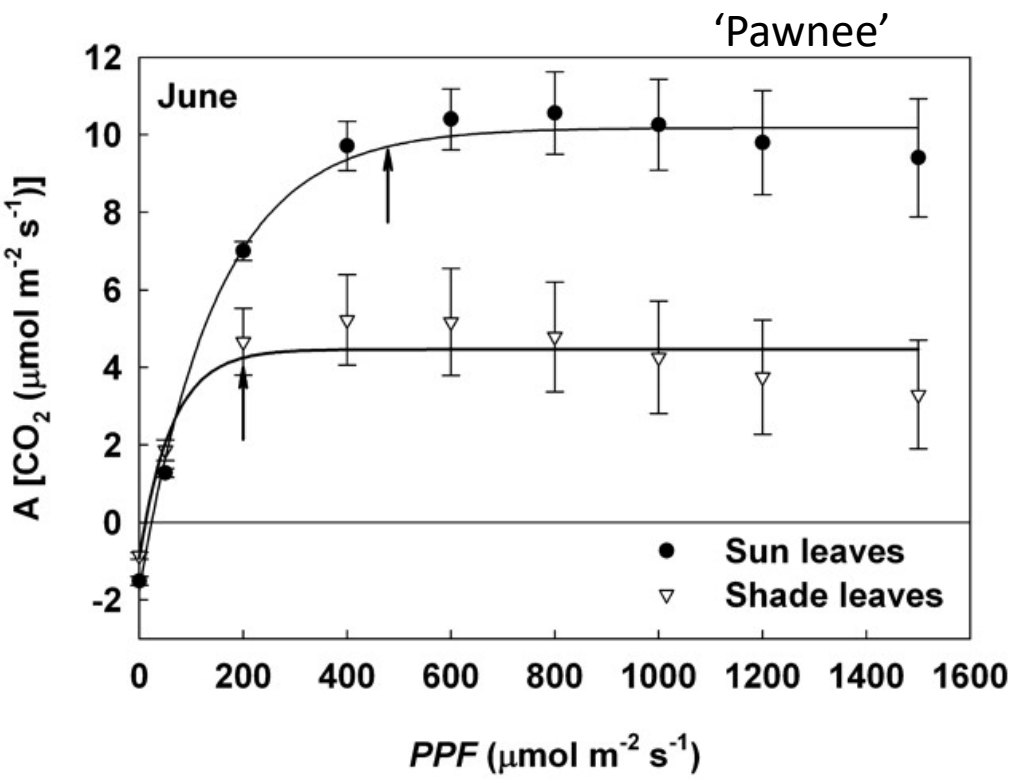
Temperature

- Respiration rates go up as temps rise

- Plants are able to adapt photosynthetic temp optima to their growing environment

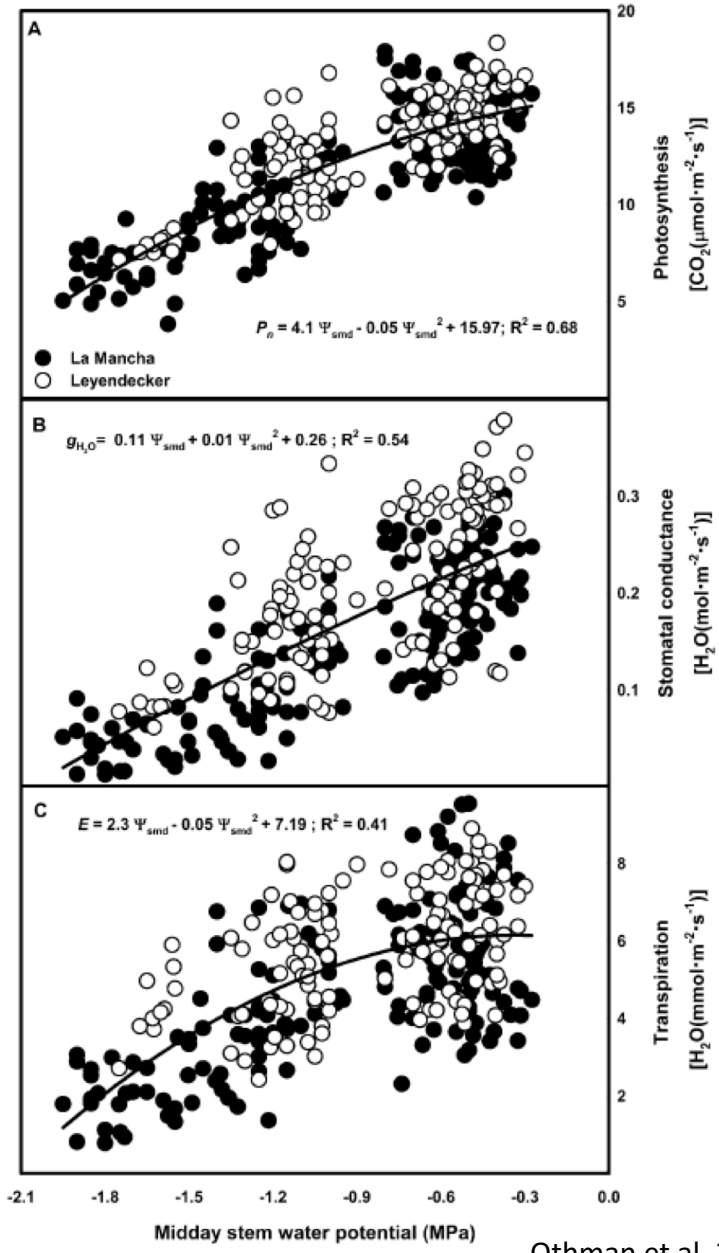


Light



Source: Lombardini et al., 2009

Water: Not enough

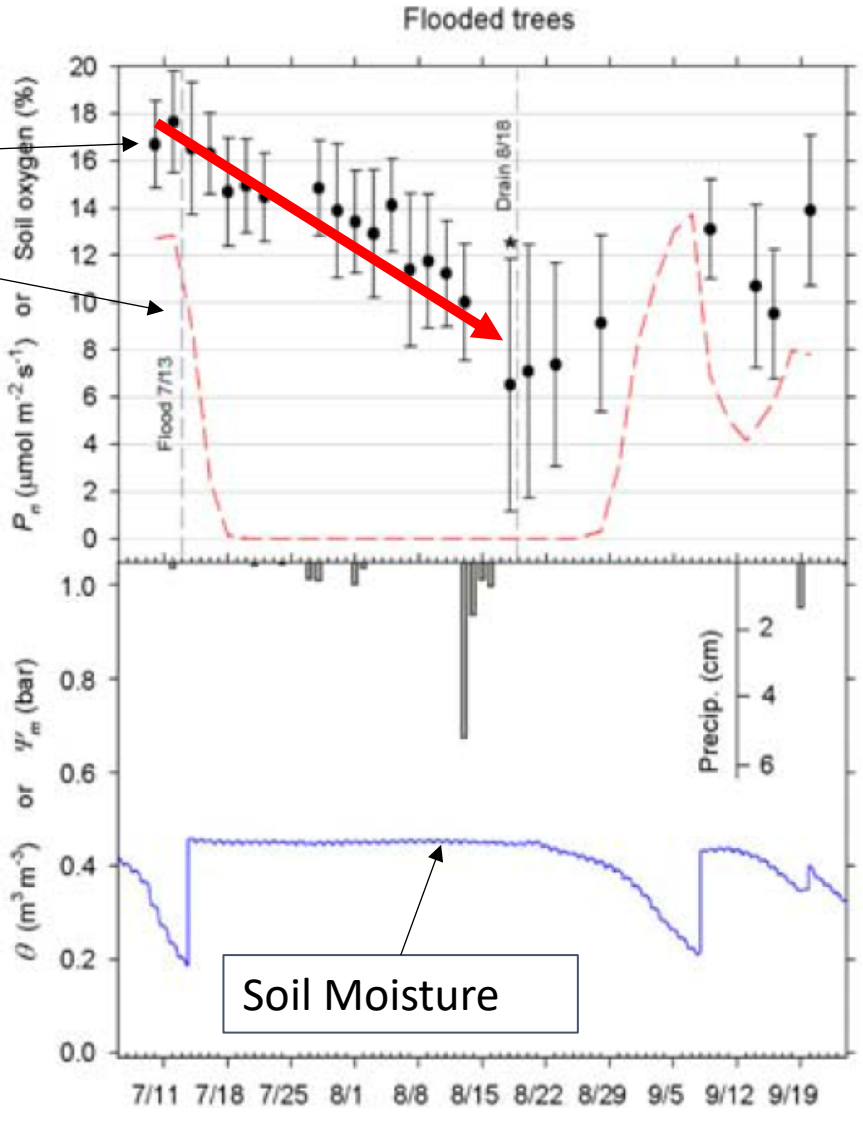


Othman et al, 2019

Too much Water

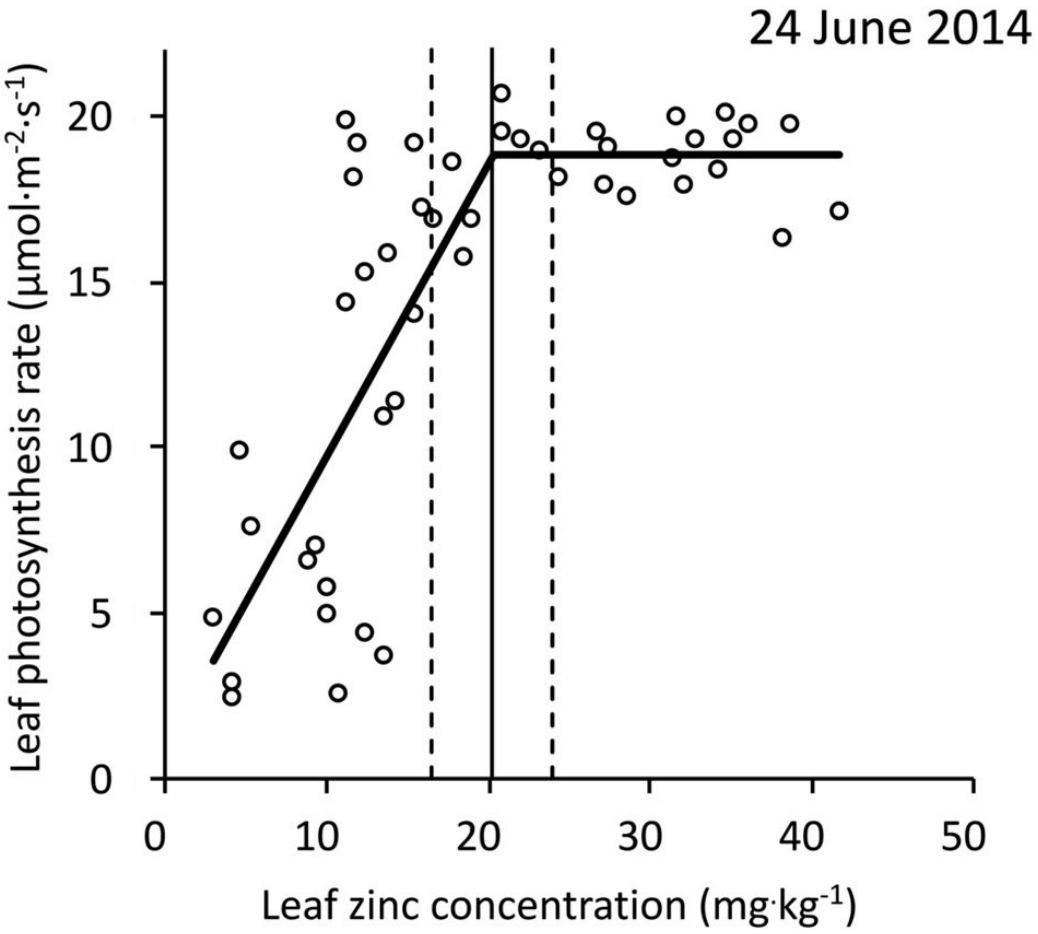
Photosynthesis

Soil Oxygen

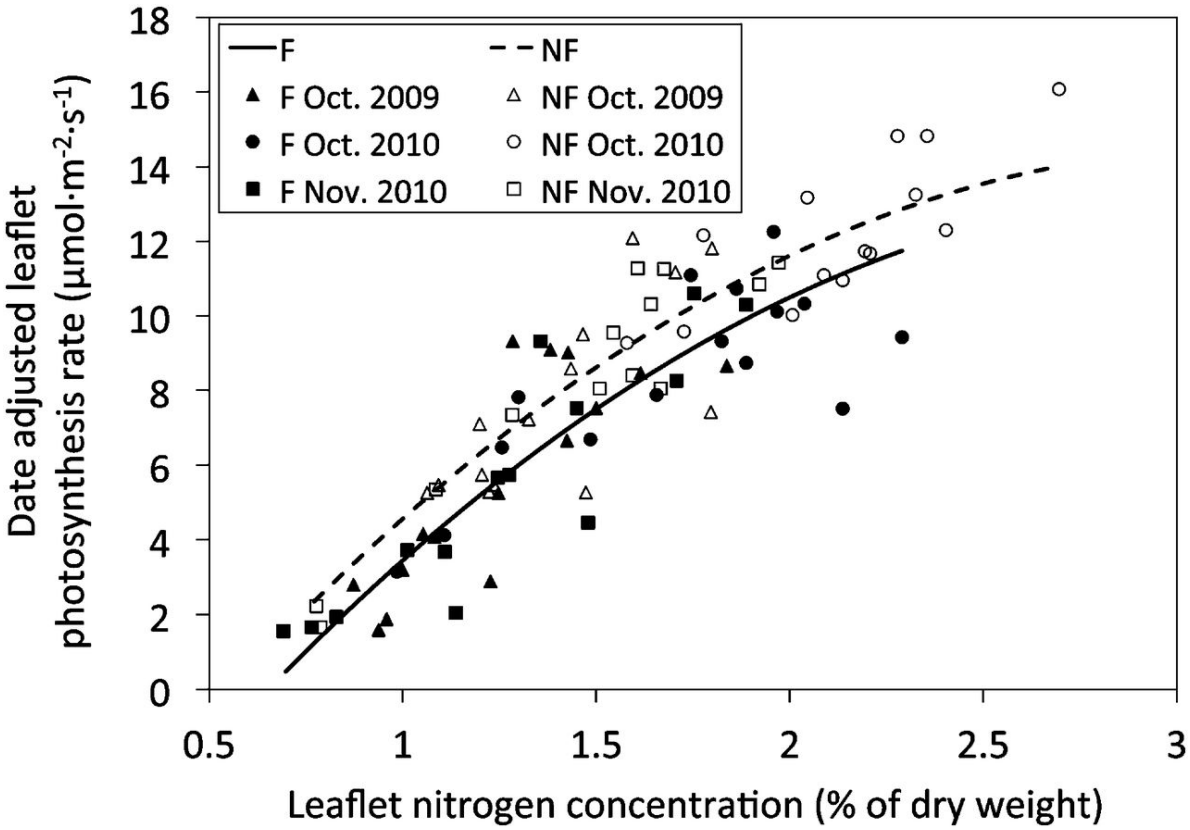


Kallestad et al., 2007

Mineral nutrition: Zinc



Mineral Nutrition: Nitrogen



Foliar Insect Pests & Diseases

N. Goldberg

Questions?

Sources

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