

Integrative Biology 102: Lecture Outline

Productivity

Lecture Objectives

By the end of the lecture and after reading the text assignment, you should be able to:

1. list environmental factors that affect the rate of photosynthesis.
2. use your diagrams of a leaf and cell to explain how and where these environmental factors affect the rate of photosynthesis in a plant:
 - * water
 - * carbon dioxide
 - * light
 - * nutrients
 - * temperature
3. explain how the factors listed in Obj. 2:
 - * affect biome productivity
 - * affect the production of plant crops.
4. predict the relative productivity of biomes.
5. explain why C4 plants like corn have a higher yield than C3 plants.
6. describe the ways humans have appropriated ecosystem NPP.
7. list the largest threats to continued increasing crop productivity.

Reading: Ch. 4.3 and 5.4

Terms

gross primary productivity (GPP)	biomass
net primary productivity (NPP)	biome

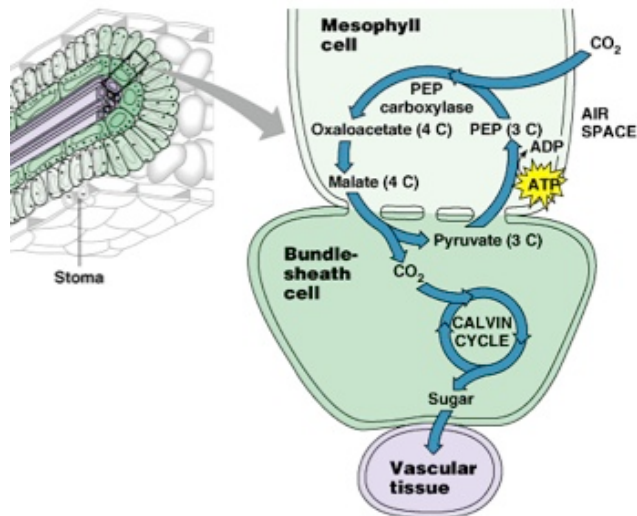
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1. Productivity

2. Biome productivity and limiting environmental factors

3. Agricultural yields

* depend on

* photorespiration: a solution by some grasses



4. Human appropriation of NPP

5. Climate change & agriculture

6. Population growth & food availability

For the next lecture on *Releasing Energy: Respiration* there is no additional reading, but be able to answer the following questions:

- * If our cells had the same anaerobic pathways as plants, what would happen when we exercised aerobically?
- * Why do compost piles heat up?