Careers in Botany and Agriculture

Careers: Farming
- Cultivating a plant crop
- Cabbage, beets, apple, onion, banana, wheat, pumpkin, pine trees (Christmas) etc.
- Stewardship of land

Careers: Fishing
- Dangerous and demanding
- Not just catching fish, also feeding
- Responsible not to overfish certain areas
- Price rises and falls with market & demand

Careers: Ranching
- Raising livestock
- Cattle, sheep, porcine, equine
- Used for human consumption and recreation
- Region specific

Careers: Government
- USDA, FDA
- DLNR, Forestry Service
- Many government agencies dedicated to the preservation and protection of our environment and your safety.

How Plants Work
Quick intro to photosynthesis!
Plants are the basis of all life

- able to turn materials most organisms cannot use into something they need
- through a process called photosynthesis, plants can convert carbon dioxide (CO$_2$) and water (H$_2$O) with the help of the sun and turn it into sugar (C$_6$H$_{12}$O$_6$) and oxygen gas (O$_2$)
- PRETTY AMAZING!

How is it done?

- plants use leaves to capture energy from sunlight
- like solar panels on your roof to make hot water
- inside the leaf there are beads of green organs called chloroplasts
- the chloroplasts are able to capture the sun’s energy and uses it to fuel the “magical” stage of photosynthesis

Making Food

- after collecting energy from the sun, the plant can now start making sugars
- this process of making sugar from water and carbon dioxide was discovered by an American biochemist named Melvin Calvin

At night there’s no sun!

- at night when the sun is gone, the plant is still needing energy
- so now the plant needs to metabolize something (break a molecule) for energy
- the plant stores the sugar it made during the day to use later at night when it needs a snack!
Photosynthetic Equation

$$6 \text{CO}_2 + 6 \text{H}_2\text{O} \rightarrow C_6\text{H}_{12}\text{O}_6 + 6 \text{O}_2$$

- Problem – this doesn’t show the magic of photosynthesis. It gives the ingredients but doesn’t explain how it’s done.

References

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