Plant Study Guide for Week 5

Four Characteristics of All Living Things; Plant Structures for Defense; Plant Tropisms; Mold/Fungi

Four Characteristics of All Living Things

1. **OBTAIN & USE RESOURCES FOR ENERGY**
   - **need food, oxygen, and water, which provide required energy to perform the basic processes of life, such as growing and developing, or repairing injured parts.**
   - ***Autotrophs* (ex: plants) provide their own food for energy through the process of *photosynthesis***
   - ***Heterotrophs* (ex: animals-US) must find an external source for food.**
   - **Energy is released from food in most organisms through the process of *respiration*.**
2. **RESPONSE TO STIMULI**
   - **A *stimulus* is any change in an organism's surroundings that will cause the organism to react.**
   - **Examples- changes in: light, temperature, sound, amount of water, space, amounts or types of food, or other organisms present.**
   - **The reaction to the stimulus is called a *response*. It can be an action or behavior performed by the organism.**
3. **ABILITY TO REPRODUCE**
   - **Organisms have the ability to produce offspring that have similar characteristics as the parents. There are two basic types of reproduction:**
   - ***Asexual reproduction*: involves only one parent and produces offspring that is identical to the parent.**
   - ***Sexual reproduction*: involves two parents. The egg (female reproductive cell) and sperm (male reproductive cell) from these two parents combine to make an offspring that is different from both parents.**
4. **GROWTH & DEVELOPMENT**
   - ***Growth* is the process whereby the organism becomes larger.**
   - ***Development* is the process that occurs in the life of the organism that results in the organism becoming more complex structurally.**
   - **Organisms require energy to grow and develop.**

Plant Structures for Defense

- **thorns that can defend the plant from being eaten by some animals**
- **fruits and leaves with poisons so that they are not eaten by animals**
- **the ability to close its leaves when touched (*Thigmotropism*)**





Fungi Singular: Fungus Plural: Fungi pronounced[fuhn-jahy, fuhng-gahy]

- **Kingdom of organisms that do not make their own food.**
- **Must grow in or on other organisms, such as plants. *It affects the stems, leaves and or fruits of the plants.***
- **Example- grain mold, corn smut, and wheat rust, cause diseases in those plants that result in crop losses (see pictures).**
- **Diseases caused by fungi may also affect other important crops, such as rice, cotton, rye, and soybeans (see pictures).**
- **If a fungus infects a tree, fruit, or grass, it can eventually kill the plant.**

Fungi that break down dead plants and animals are: Decomposers

Food or drink items in the Fungi Kingdom: Soy Sauce, Blue Cheese, Mushrooms, Beer, Wine, Bread Yeast

Who discovered the first antibiotic and what was it? Alexander Fleming = Penicillin (a very helpful fungi to humans).

Corn Smut

Pre-harvest grain mold

Shelf Brackets

Tomato fungus

Mold

Wheat Rust

White truffles from Alba, Italy, sell at for $4,000 a pound/$50 each.

Death Caps-NO, DO NOT EAT THESE!

Honey Mushrooms-YES YOU CAN EAT THESE!

- **most mushroom poisonings in the world**
- **looks a lot like other mushrooms which people eat**
- **cap up to six inches wide, and a stalk up to five inches tall**
- **seen from September to November underneath pines, oaks, dogwoods, and other trees**

Plant Responses to Environment (Tropisms)

- ***Dormancy-*** **time when the growth or activity of a plant or seed stops due to changes in temperature or amount of water.**
- **allows various species to survive in environments**
- **ensures that seeds will germinate when conditions are favorable for survival of the small seedlings.**
- **For example, leaves fall from trees prior to the conditions of winter and the leaf buds do not open again until conditions are favorable in the spring.**

Tropism**- growing or moving their stems, roots, or leaves toward or away from the stimulus.**

Phototropism- **plant grows or moves in response to light**

Gravitropism- **plant grows or moves in response to gravity; also called *geotropism.*** ***Video Clip of Negative Geotropism***

Hydrotropism- **plant grows or moves in response to water.**

Thigmotropism- **plant grows or moves in response to touch (see pictures below).**

Question: How does a Venus Flytrap respond when an insect is detected on it? Answer: It closes up (Thigmotropism)!

Question: How does a Jewelweed pod respond when touched? Answer: It springs open and releases its seeds to be spread in the win (Thigmotropism)!

Before the pods pop. **After the pods pop.**

Tropisms

Tropisms occur when plants respond to external stimuli. Tropisms are movements caused by a change in a plant's growth pattern. Tropisms can be negative or positive. If the plant moves toward the stimulus, the tropism is defined as positive. If the plant moves away from the stimulus, the tropism is considered negative.

Geotropism	Hydrotropism	Thigmotropism	Phototropism
Gravity causes a response in a plants growth.	The way a plant grows or bends in response to water.	Plants bend or grow because of touch. An example would be when vines wrap around an arbor frame.	The way a plant grows or bends in response to light.
			
In the above image, what part of the plant exhibits positive tropism, and which part (s) of the plant exhibits negative tropism?	Why would it be important for some parts of a plant to be pulled toward water?	What are some other ways a plant can be "touched"?	Why do you think sunflowers were given their name?

Which Tropism do you see? (Answers: thigmotropism, phototropism, geotropism, hydrotropism)