



# Garden Education - Lesson 1

Understanding Plants

All Grades

**Lesson 1: Understanding Plants** is the first video in a virtual series of Garden Education programming for the 2020-2021 academic year.

**Length of Lesson:** Approx. 30 minutes (video and worksheet)

**Objective:** Students will understand the basic role of plants in our lives, and their structure, function and lifecycle.

## Vocabulary Words

- **PHOTOSYNTHESIS** - The process by which plants convert carbon dioxide into their food, by using the energy derived from the sun. The most essential elements of this process are sunlight, water, carbon dioxide and chlorophyll.
- **FOOD CHAIN** - A sequence of organisms in which each depends on the next and usually lower member as a source of food.
- **SEED DISPERSAL** – Seed dispersal is the movement or transport of seeds away from the parent plant.
- **POLLINATION** – Pollination is the process of pollen being transferred from the anther (a plant part) to the stigma (another plant part) of a flower to fertilize it and make seeds.

## Role of Plants in Our Lives

1. Provide us with our habitat
2. Supply us with oxygen through photosynthesis
3. Provide us with nutrients, vitamins, minerals, fiber and water when we eat them
4. Beginning of the food chain for all living organisms

## Basic Plant Structure

- |                      |                    |
|----------------------|--------------------|
| • Roots              | • Flowers/Blossoms |
| • Stalks (sometimes) | • Fruit or Pod     |
| • Stems              | • Seeds            |
| • Leaves             |                    |

## Plant Parts We Eat

- Roots – such as carrots, beets
- Stems – such as asparagus, broccoli stems
- Leaves – such as leafy greens: lettuces, kale, swiss chard, herbs
- Florets and Flowers/Blossoms – such as broccoli florets, cauliflower, squash blossoms
- Fruits and Pods – such as apple, orange, tomato, avocado, peas
- Seeds – such as sunflower, sesame, pumpkin

## Plant Function and Lifecycle

- Roots anchor the plant in the ground and take up nutrient-rich water from the soil and transport it up into the stem.
- Stalks and stems create support and structure for the rest of the plant. Within the stem, xylem carries the nutrients to the various plant parts.
- Photosynthesis occurs on the leaf surfaces, converting sunlight and CO<sub>2</sub> into sugar and storing it.
- Plants will produce blossoms to attract pollinators. Blossoms contain the parts of the flower that are used in reproduction (anther and stigma).
- Pollinated blossoms will produce a seed or pod full of seeds, unique to that plant.
- The plant will disperse the seeds that are ready to grow into new plants. Different plants disperse seeds in different ways.
- Many plants, called *ANNUALS*, will die and decompose after seed dispersal. There are also *BIENNIALS*, which take two years to produce before dying, and *PERENNIALS*, which come back year after year.
- Decomposing plants contribute nutrients back into the soil by becoming food for *DECOMPOSERS*, organisms that consume decaying organic matter. They break the plants down, making the nutrients within available for other plants to use.
- Newly planted seeds are self-contained with nutrients to feed the embryonic plant while it's in the early stages of germination. Once they sprout roots and *COTYLEDON*, which are a plant's first two leaves, they can begin photosynthesizing and taking nutrients from the soil.

## Put Your Plant Knowledge to Practice

### Activity

- Print the “Understanding Plants” student worksheet
- Set up a workspace with a flat working surface, such as a table or tray, that is calm and quiet (outside is great, if possible.)
- Provide the following supplies for the activity:
  - Student worksheet, “Understanding Plants”
  - Colored pencils
  - Blank paper
  - Cutting board
  - Plant or plant part
  - Knife or other cutting tool (parent to determine child's age and level of cutting skills and whether child needs assistance with dissection)
  - **OPTIONAL:** Magnifying glass
- Have student search for a plant or plant part that they will dissect and observe. If desired, they can choose more than one, such as different plant parts of the same plant, or the same plant part of different plants (i.e. various flower heads or fruits to compare.)
- Allow student to inspect and discover the plant at their workspace, with or without the magnifying lens.
- Have the student draw what they see with their colored pencils.
- When their drawing is complete, have them cut the plant open to see what they find (i.e. inspecting the inside of a stem or a flower, fruit or pod) and draw what they discover.
- Have them write down any questions that they came up with during this process (such as, “what is THAT?”)