

# Plant Tops and Bottoms

**Purpose:** Students will describe the major parts of plants – roots, stems, leaves, flowers and seeds. Students will also discover that we eat many of these plant parts every day.

**Time:** 2, 30 minute activities

**Level:** K

## Materials:

- Variety of vegetables that are roots, stems, leaves, flowers, and seeds (see list below). If actual vegetables are not available use pictures.
- MyPlate Diagram
- Picture of a plant (the Dry Edible Bean card from MN Agriculture in the Classroom would be a good example. <http://www.mda.state.mn.us/kids/commoditycards.aspx>)
- *Tops and Bottoms* by Janet Stevens
- *Plant Parts We Eat* Worksheet

## Food examples of plant parts:

Roots: radishes, beets, carrots, parsnips

Stems: Asparagus, celery

Leaves: lettuce, cabbage, spinach, mustard greens, kale

Flowers: broccoli, cauliflower

Fruit: Eggplant, tomatoes, pumpkins, squash, cucumbers

Seeds: peas, corn



## Minnesota/Common Core Language Arts Standards and Benchmarks

0.1.1.1 With prompting and support, ask and answer questions about key details in a text

0.1.1.2 With prompting and support, retell familiar stories, including key details.

0.1.1.3 With prompting and support, identify characters, settings and major events in a story

## Minnesota Science Standards and Benchmarks

0.4.1.1.2 Identify the external parts of a variety of plants and animals including humans.

## Minnesota Health Standards and Benchmarks

1.1 The student will describe how individual behavior affects individual health.

## *Background*

Many foods we eat are plants. The plant foods provide essential nutrients including many vitamins and minerals. These plant foods can be an excellent teaching tool for understanding the external parts of a plant – roots, stems, leaves, fruits, and seeds.

Roots are usually found underground with the functions of anchoring the plant and also absorbing water and nutrients from the soil. In some plants they also serve as a storage area for food for the plant.

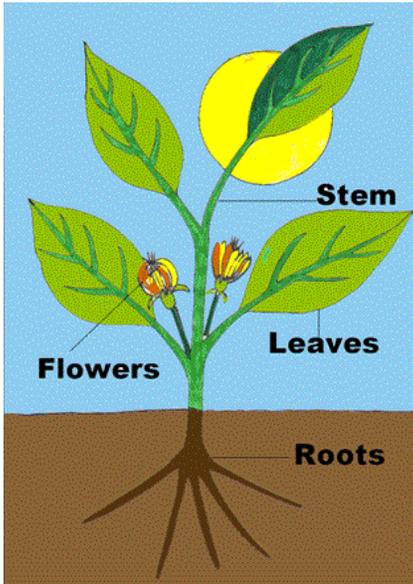
Stems are the main stalk of a plant. Usually stems grow above ground and transport water and nutrients from the roots to the leaves and flower. The leaves produce food (glucose) which is also transported throughout the plant by the stem. You can think of the stem as a passage way for water and food. In addition, the stem serves as a backbone, offering the plant support and structure.

The leaves of a plant serve as solar panels. They collect sunlight and use this solar energy to power photosynthesis. Photosynthesis occurs in the leaf. The plant takes in water and carbon dioxide. The sun's energy causes a chemical reaction which converts the water and carbon dioxide into glucose (food for the plant) and oxygen. The plant uses the glucose to grow and the oxygen is given off into the environment.

The flower of a plant is designed for reproduction. The petals, or modified leaves, attract pollinators that transfer pollen so seeds can be produced in the flower.

The fruit is the ripened ovary of the flower of a plant. Seeds are contained inside of the fruit. Many seeds can be eaten or also used to grow new plants.

## Procedure



### Activity 1 – Plants = vegetables

1. Collect a variety of vegetables that represent the different parts of the plant. Use the list to the left for ideas to include roots, stems, leaves, fruits, and flowers.
2. Display these vegetables and ask the students if they have seen any of these items before. Also ask what some of their favorite vegetables to eat are.
3. Display the USDA's MyPlate diagram  
<http://www.choosemyplate.gov/>
  - a. Ask students where these food items would fit in the diagram (*vegetables*)
  - b. Ask students why we should eat vegetables instead of candy bars, ice cream, etc. (*vegetables provide nutrients that help keep us healthy and keep the systems in our body working well. Vegetables can also help us fight disease and sickness*)
4. Inform students that vegetables are plants. Draw or show a picture of the common parts of a plant (Use the diagram to the left as a guide. The dry edible bean card that is part of the Minnesota Agriculture in the Classroom commodity cards is also a good sample.)  
<http://www.mda.state.mn.us/kids/commoditycards.aspx>
5. Help students understand the major purpose of each part:
  - a. Roots – absorb water, anchor
  - b. Stem – transport water and food
  - c. Leaves – soak up sun, make food
  - d. Flower – produce seeds
  - e. Fruit – hold seeds
6. Go back to your display of vegetables. Ask for student volunteers or call on students to identify which part of the plant each vegetable represents. (Example: lettuce is a leaf, beets are roots, etc). Possibly have a team or the whole class sort the vegetables into groups relating to the parts of a plant.
7. Ask the students how we get all of these different plant parts to eat. (*Farmers plant seeds, provide the seeds with water and sunlight, and the plants grow. Once the plants are fully grown they are picked or harvested. We can buy these plant parts at grocery stores, farmers markets or we can have a garden where we grow them ourselves.*)

### Activity 2 – Plant Tops and Bottoms

1. Show students the book *Tops and Bottoms* by Janet Stevens. Tell the students that this book is about a rabbit and a bear who decide to grow some plants to eat. The title is *Tops and Bottoms*. Ask the students:
  - a. Which vegetables would be tops? (*stems, leaves, flowers*)
  - b. Which vegetables would be bottoms? (*roots*)
2. Read the book Tops and Bottoms. Ask the students:
  - a. What are some plants that have good “bottoms” to eat?
  - b. What are some plants that have good “tops” to eat?
  - c. What are some plants that have good “middles” to eat?
  - d. How is the Hare similar to Minnesota farmers who grow plants that we eat? (*The hare knows about the different*

- parts of a plant and which ones we eat. He also knows how they should be grown and harvested.)*
- e. What lessons can we learn from the Bear? (*He is lazy. The story suggests that laziness will harvest little.*)
3. Have the students complete the Plant Parts We Eat worksheet. This can serve as an assessment to see the level of understanding the students gained on plant parts.

### ***Additional Activities***

- Wash the vegetables thoroughly and have the students also wash their hands thoroughly. Prepare a plant parts salad or other healthy snack with the vegetables used in the lesson.
- Obtain a variety of vegetable seeds and have students plant them in small pots or cups with drainage holes. All that is needed is water and light and the seeds should sprout in a week or two.
- Write the lunch menu on your whiteboard for several days. Ask students to identify the vegetables being served and determine whether they are a stem, seed, flower, etc.

### ***Resources***

- The USDA has additional information and healthy eating tips. <http://www.choosemyplate.gov/>.
- Minnesota Agriculture in the Classroom has FREE classroom sets of Minnesota commodity cards available. These 8.5 x 11 inch flashcards offer information on a variety of Minnesota's plants and animals. <http://www.mda.state.mn.us/kids/commoditycards.aspx>
- Tops and Bottoms by Janet Stevens can be found at bookstores and on-line retailers. It is also available as part of Minnesota Agriculture in the Classroom's Children's Literature Book Bundle. <http://www.mda.state.mn.us/kids/childrens-lit-bundle.aspx>

*Adapted from Oklahoma Agriculture in the Classroom.*

*In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651/201-6000. TTY users can call the Minnesota Relay Service at 711 or 1-800-627-3529. The MDA is an equal opportunity employer and provider.*

Name \_\_\_\_\_

# Plant Parts We Eat

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Match the plants to the parts we eat.



roots

stems

leaves

seeds

flower

