



November: 9-12

All About Food Plants



South Carolina

Farm to School Lessons

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Overview

Welcome to the South Carolina Farm to School November Nutrition Education Lesson. This lesson contains information & hands on activities for teaching grades 9-12 about the benefits of fruits & vegetables. Our goal for this lesson is to help children understand not only the benefits of eating fresh fruits & vegetables but also reinforcing the importance of whole foods.

In order to achieve this goal, students will explore why whole plant foods are so special & beneficial for our bodies. In addition, students will explore different plants & from these, they will gain an appreciation that they eat many different parts of plants. Students will learn how to make half of their plates fruits & vegetables, & a quarter of their plate with grains. They will remember from the September F2S lesson that these foods should be whole rather than overly processed. To celebrate what they have learned in class, the class will make a salad with the Palmetto Pick of the Month. Students are encouraged to share what they have learned with their families & suggest their families buy & eat more plant-based foods together.

These lessons are designed to be delivered over a four week period, noting that introduction & activities will be supplemental to existing curriculum.

Estimated Total time: 110 minutes

Teacher Background

The focus of this lesson is the importance of having a diet with a strong foundation of whole plant foods. While animal foods are often rich in proteins, vitamins, and minerals, they are also often high in saturated fat and cholesterol. Those substances start clogging blood vessels even in youths and increase the risk of heart attacks as people get older. Plants are truly special. Not only are they essential for all life on earth, but they produce hundreds of natural chemicals, such as vitamins and minerals that help every organ — from our heart to our brain — in our body working right.

The U.S.D.A.'s MyPlate recommends that about three-quarters of our plates be plant foods: half fruits and vegetables and about one-quarter grains, of which at least half should be whole grains. When students have the opportunity to experience whole plant foods with all their senses, as they get to do when they garden, cook, and eat foods from plants, they build their appreciation for eating plants just as they come from nature. Also, since foods from plants often have complex tastes that have bitter and/ or sour flavors, students need to try these foods many, many times to develop a liking for them.

View this lesson as a way to build an appreciation for eating plants, and for students to really believe that when they eat whole foods from plants, they are making choices that are good for their own health and good for the health of the planet.¹

¹ Lesson adapted from Food Day Lessons: Mostly Plants

Lesson Checklist



F2S Aim: To understand the benefits of fruits & vegetables.

F2S Objectives

Students will be able to:

- * Describe how a diet high in plant food & low in saturated fat & cholesterol is good for our health.
- * List the health benefits of eating roots, stems, leaves, flowers, fruits & seeds.
- * Design a commercial advertising the health benefits of plant parts.
- * Prepare a salad using the Palmetto Pick of the Month.



Materials:

- * Plant Parts Sheets (Appendix A)
- * Salad Grocery list: 1 head lettuce, 7 carrots, 1 turnip, 1 bunch celery, 1 pint cherry tomatoes, 1/2 bunch of broccoli, 8 ounces ready-to eat sunflower seeds, lemon juice, salt and pepper.
- * Kitchen Supplies: cutting boards, plastic knife, 1 spoon to serve dressing, 2 large spoons to toss & serve salad, 5-6 small bowls to hold chopped vegetables, 1-2 bowls to hold the salad, paper plates & forks to serve/eat salad.
- * Gardening Supplies: turnips or lettuce seeds, small plastic bags and soil
- * Gardening journal.



National Health Education Standards

1.12.1	1.12.3	1.12.7	2.12.2	2.12.4
2.12.5	2.12.8	2.12.10	3.12.1	3.12.2
3.12.3	3.12.5	4.12.1	4.12.2	4.12.4
5.12.1	5.12.2	5.12.6	5.12.7	6.12.1
6.12.2	6.12.3	7.12.1	7.12.2	8.12.1
8.12.2	8.12.3	8.12.4		

SC State Standards

E2-2.1	Compare/contrast theses within and across informational texts.
E2-2.2	Compare/contrast information within and across texts to draw conclusions and make inferences.
E2-2.3	Analyze informational texts for author bias (including word choice, the exclusion and inclusion of particular information, and unsupported opinions).
E2-2.4	Create responses to informational texts through a variety of methods (for example, drawings, written works, oral and auditory presentations, discussions, and media productions).
E2-2.5	Analyze the impact that text elements have on the meaning of a given informational text.
E2-2.7	Analyze propaganda techniques in informational texts.
E2-4.1	Organize written works using prewriting techniques, discussions, graphic organizers, models, and outlines.
E2-4.2	Use complete sentences in a variety of types (including simple, compound, complex, and compound-complex).
E2-4.4	Use grammatical conventions of written Standard American English, including <ul style="list-style-type: none"> • subject-verb agreement, • pronoun-antecedent agreement, • agreement of nouns and their modifiers, • verb formation, • pronoun case, • formation of comparative and superlative adjectives and adverbs, and • idiomatic usage.
E2-4.5	Revise writing to improve clarity, tone, voice, content, and the development of ideas.
E2-4.6	Edit written pieces for the correct use of Standard American English, including the reinforcement of conventions previously taught.
E2-5.3	Create descriptive pieces (for example, personal essays, travel writing, or restaurant reviews) that use sensory images and vivid word choice .
E2-6.2	Use direct quotations, paraphrasing, or summaries to incorporate into written, oral, auditory, or visual works the information gathered from a variety of research sources.
E2-6.3	Use a standardized system of documentation (including a list of sources with full publication information and the use of in-text citations) to properly credit the work of others.
E2-6.4	Use vocabulary (including Standard American English) that is appropriate for the particular audience or purpose.

E2-6.5	Create written works, oral and auditory presentations, and visual presentations that are designed for a specific audience and purpose.
E2-6.6	Select appropriate graphics, in print or electronic form, to support written works, oral presentations, and visual presentations.
E2-6.7	Use a variety of print and electronic reference materials.

Lesson Essential Components

Lessons profile	Page(s)	Yes	No	Notes
Palmetto Pick of the Month	9	★		Tasting activities with turnips
Health Education Standards	4	★		
SC-Cross Curricular Standards	5-6	★		
SC-F2S Behavioral Goals	4	★		
Cooking Activities	9	★		
Tasting Activities	9	★		
Physical Activity	8-10	★		
Food Safety	9	★		
School Food Garden	8-9	★		
Student to Farmer Connections (i.e. field trips, talks)	8-10	★		
Student to Chef Connections			★	
Farm to Cafeteria			★	
Provision of scientific knowledge/rationale	8-10	★		
Risks and benefits of healthy behaviors	8-10	★		
Obstacles, Barriers & Solutions	8-10	★		
Family involvement and other supports		★		Family Activity Letter
Set goals and monitor progress	8	★		
Other hands on activities:	8-10	★		Team Activities, Presentations

Activity

Whole Foods

Estimated Time: 10-15 mins

1. Review Goal Sheet from September lesson. How many students met their goal? How many ate whole foods for breakfast? Did they add whole foods to other meals such as lunch or dinner?

- If needed replay the Nourish Whole & Healthy Foods video. (<http://www.nourishlife.org/videos/whole-healthy/>)
- Remind students of the importance of starting their day out right by fueling their body with breakfast. Also, remind them of the importance of choosing whole & healthy foods throughout the day.
- If students did not meet their goals, encourage them to continue trying. Allow a few students to share their success stories to help inspire all students.
- Encourage students to increase whole foods with lunch & dinner.

Let's Learn!

What part do we eat?

Estimated Time: 15-20 mins

1. On the board, write down the six parts of the plant that we eat. See Appendix A for information on the six plant parts.
2. Before discussing each plant part, have students stand up if they can name at least two fruits or vegetables that belong in each category.
3. Review with students the different parts of the plants that we eat as well as the nutrients of each plant part.

Activity

Action: Choose this!

Estimated Time: 60-75 mins

1. Divide students into six groups of four-five students. Each group should receive a plant part & choose a fruit or vegetable in their plant part

category. Students will complete steps to create their own commercial to advertise a fruit or vegetable showing the nutritional benefit in regards to nutrients & MyPlate portion sizes as well as the importance of whole foods & buying locally grown produce.

2. Have groups review commercials that focus on fruits and vegetables. Questions to focus on when watching the commercials:

- How is the fruit or vegetable portrayed in the commercial? Does it look tasty?
- Does it appear easy to find in your community?
- Is the commercial for a processed fruit or vegetable or a whole fruit or vegetable?
- Does the commercial recognize the local farmers that grow the fruit or vegetable? Or is it a name brand (ex: Dole, Minute Maid, etc) commercial?
- Does the commercial focus on the nutritional benefits of eating the fruit or vegetable? Does it mention the portions recommended by MyPlate?

Note: This activity should be done over a period of one-two weeks and can be done in class by viewing commercials over the web *OR* at home with students recording their observations in a notebook. If completing this assignment at home, encourage the students to talk to their parents about this assignment, helping to make parents more aware of the advertisements for food that their family views regularly. Encourage the students to discuss the differences between whole foods and processed foods with their parents.

3. After students have completed their observations, as a group, they should compare what they learned from the commercials. Encourage students to discuss the positives & negatives of the commercials.

Consider these questions:

- Based on what we have learned about whole, healthy foods, do the commercials encourage healthy eating? If not, how can they?
- Based on what we have learned about MyPlate, do the commercials encourage eating recommended portion sizes & the nutritional benefits of the fruits & vegetables? If not, how can they?

4. Each group should consider their answers to the questions & design their own commercial for their fruit or vegetable. Encourage students to be creative in creating this healthy message for their commercial. Commercials should be 30-60 seconds. Commercials should include the following:

- Information on the plant part. Educate the audience on which part of the plant they are eating.
- The nutritional benefits of the fruit or vegetable.
- The importance of whole, healthy fruits or vegetables. Recognize the benefit of local produce from farm to table.
- The availability of the fruit or vegetable in the community. Recognize the Certified South Carolina Grown logo.
- The importance of having 1/2 of your plate be fruits or vegetables (MyPlate).
- Taste. Focus on the taste of the fruit or vegetable.

Note: Students should be encouraged to video tape their commercial. If a video camera is not available, students can also create a video via power point.

★ Palmetto Pick Activity

Cooking Veggie Salad with Crispy Turnips²

Estimated Time: 15 mins

1. Have students wash their hands (with soap & warm water for 20 seconds) & reinforce that it is important. Show the students that you have washed all the salad ingredients before beginning.
2. Divide the class into 3-5 groups. Give each group some lettuce, carrots, celery, tomatoes, & turnips to cut. This method makes students feel involved in the salad making process. As students are preparing the salad, make the dressing using lemon juice, salt & pepper.
3. You may wish to demonstrate cutting techniques (show different shapes: dices, sticks, slices, stars) & tell the students to be careful with all knives (even plastic knives can hurt people). If you do not feel

comfortable having students using a plastic knife, please have ingredients pre-cut before activity.

Ingredients:

1 SC grown turnip
1 head dark green lettuce, such as romaine
7 carrots
1/2 bunch of broccoli
5 stalks of celery (from the bunch)
1 pint cherry tomatoes or 7 larger tomatoes
8 ounces ready-to-eat sunflower seeds
lemon juice, salt and pepper

Directions for the students:

- Put in some **LEAVES**: Use your hands to tear the lettuce into bite-sized pieces.
- Put in some **ROOTS**: With the plastic knife, cut the carrots & turnips into slices & bite-sized pieces, respectively.
- Put in some **FLOWERS**: With the plastic knife, cut the broccoli into bite-sized pieces.
- Put in some **STEMS**: With the plastic knife, cut the celery into bite-sized pieces.
- Put in some **FRUITS**: With the plastic knife, cut the tomatoes into bite-sized pieces.
- Place all the ingredients in the salad bowl.
- Put in some **SEEDS**: Sprinkle a small handful of sunflower seeds over the salad.
- Gently toss the salad just until it looks mixed. Be careful to not over-mix, which may damage the vegetables.
- Serve salad on the plate. Add lemon juice, salt & pepper. Enjoy.

Note: Remember, that you can use the Farm to School grant funds to purchase the F&V required for this lesson. Remind your students to look for the Palmetto Pick of the Month in their school lunches to learn other ways of preparing & serving turnips.

★ Gardening Activity

How to Grow Turnips or Lettuce

Estimated Time: 10 mins

Materials Needed:

Pot or Heavy-duty lock-type freezer bag (Pint/Quart)

Turnip or Lettuce seeds

Potting Soil

Water (spray bottle works well)

Directions:

- Fill a pot or plastic bags 3/4 of the way with good potting soil.
- Take a pinch of seeds & sprinkle on the surface of the soil.
- Cover the seeds lightly with soil.
- Water seeds with light spray. If you are using bags, close the bag leaving one inch open. (Cut off corners of the bag to allow for drainage)
- Set in a sunny window or area.
- When you see little green shoots, open the bag wider so that plants has room to grow and can breathe.
- Your plants need attention & care. You must water them properly & make sure your plants get enough light.
- Lettuce will grow fast in warm temperatures. Ideal temperature is 65-70 degrees F.
- Measure, discuss, describe & record observations in your gardening journal on the growth of your plant.

Note: This activity could be done individually (with items such as pots, plastic cups, gloves or freezer bags) or as a class in the school garden.

✍ Evaluation

Formal Assessment:

1. Review **SC Fruits & Vegetables** worksheet & discuss the differences & similarities in classifying fruits & vegetables.
2. Review Gardening Journal.

Informal Assessment: Observe participation in lesson activities. Complete survey at end of month (survey will be sent electronically).

Resources



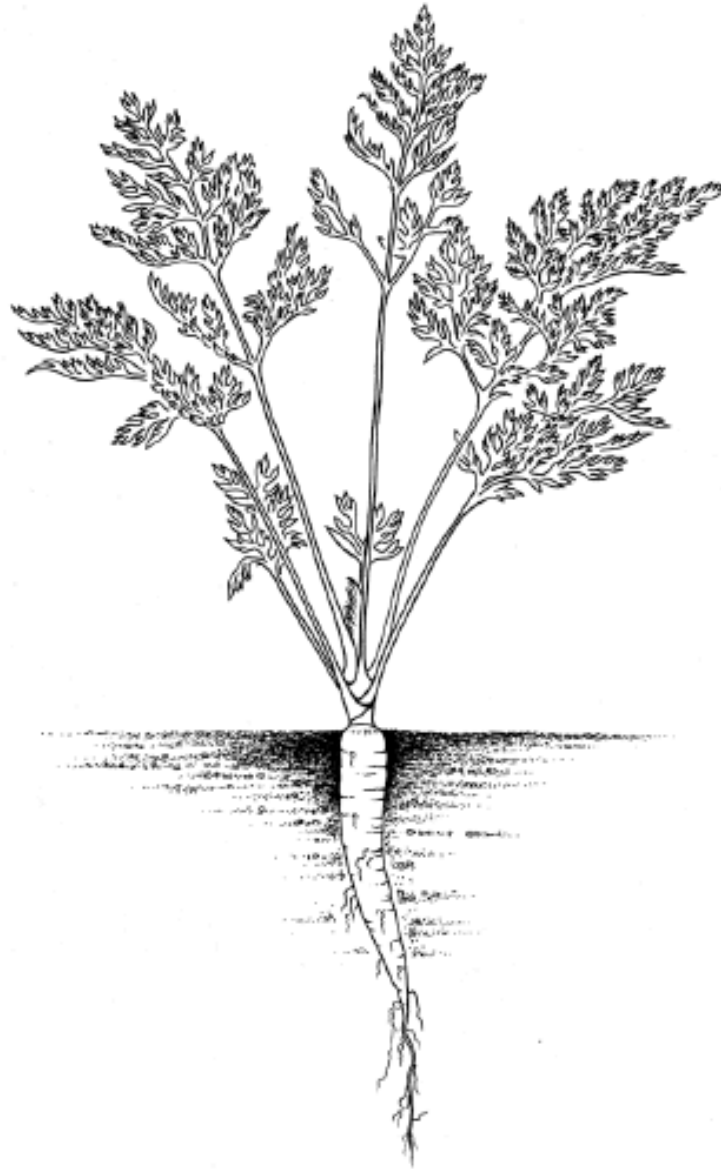
Books:

The Omnivore's Dilemma: The Secrets Behind What You Eat, Young Reader's Edition. By Michael Pollan
ISBN-13: 978-0803735002

Lesson 2: Mostly Plants

— Cards —

Plants We Eat



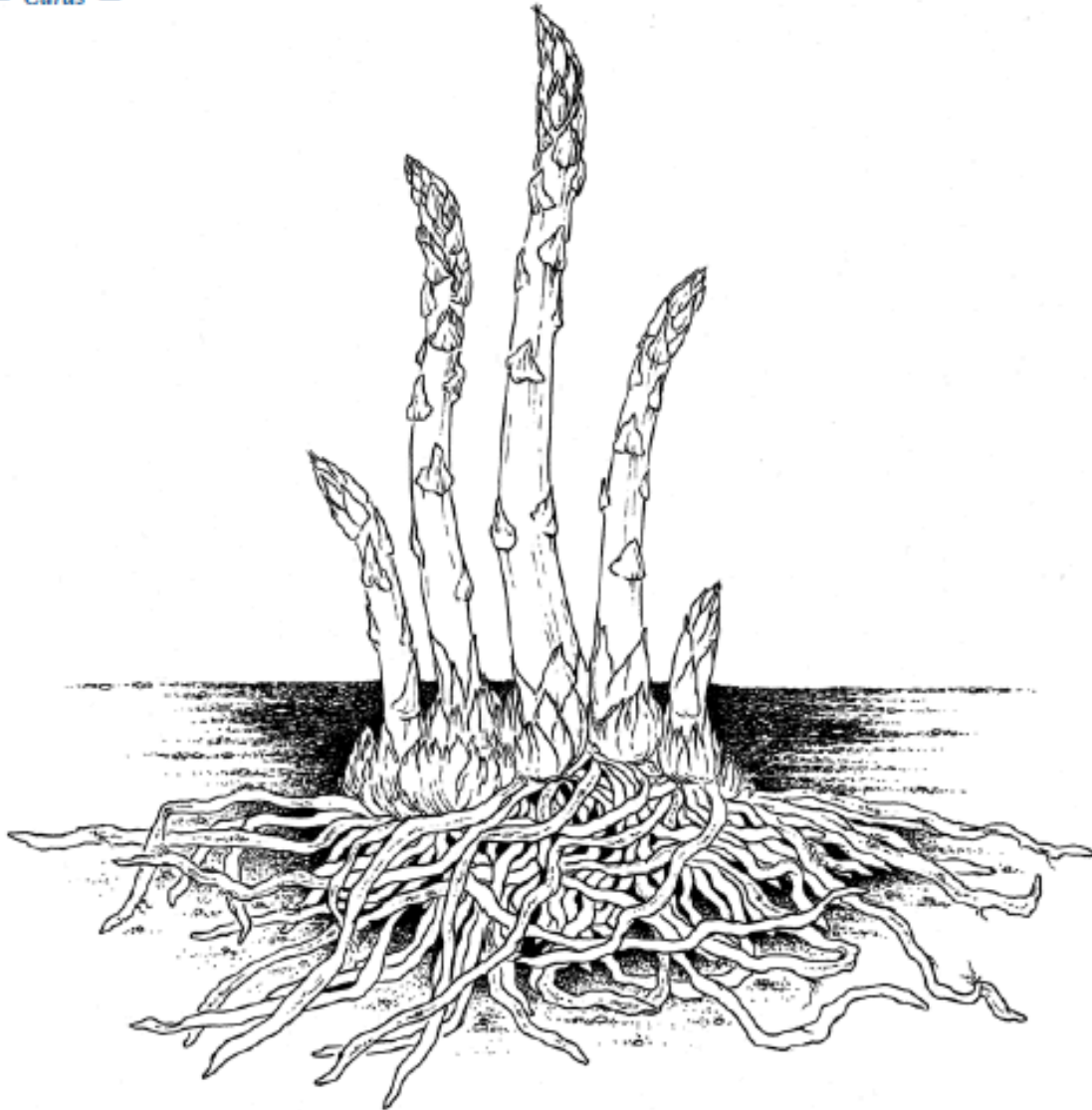
Examples of roots we eat: beet, carrot, cassava, horseradish, lotus root, parsnip, rutabaga, sweet potato, turnip

Nutritional benefits of eating roots: Orange roots, such as carrots and sweet potatoes, are good sources of vitamin A. Vitamin A can help us see well in the dark. Other root vegetables are good sources of fiber and complex carbohydrates, and various phytonutrients that can help every part of our body. For people who live in climates that are cold in the winter, roots are great vegetables to eat all winter long since they can be stored for a long time, are hardy and filling, and are loaded with nutrients we need.

Lesson 2: Mostly Plants

— Cards —

Plants We Eat



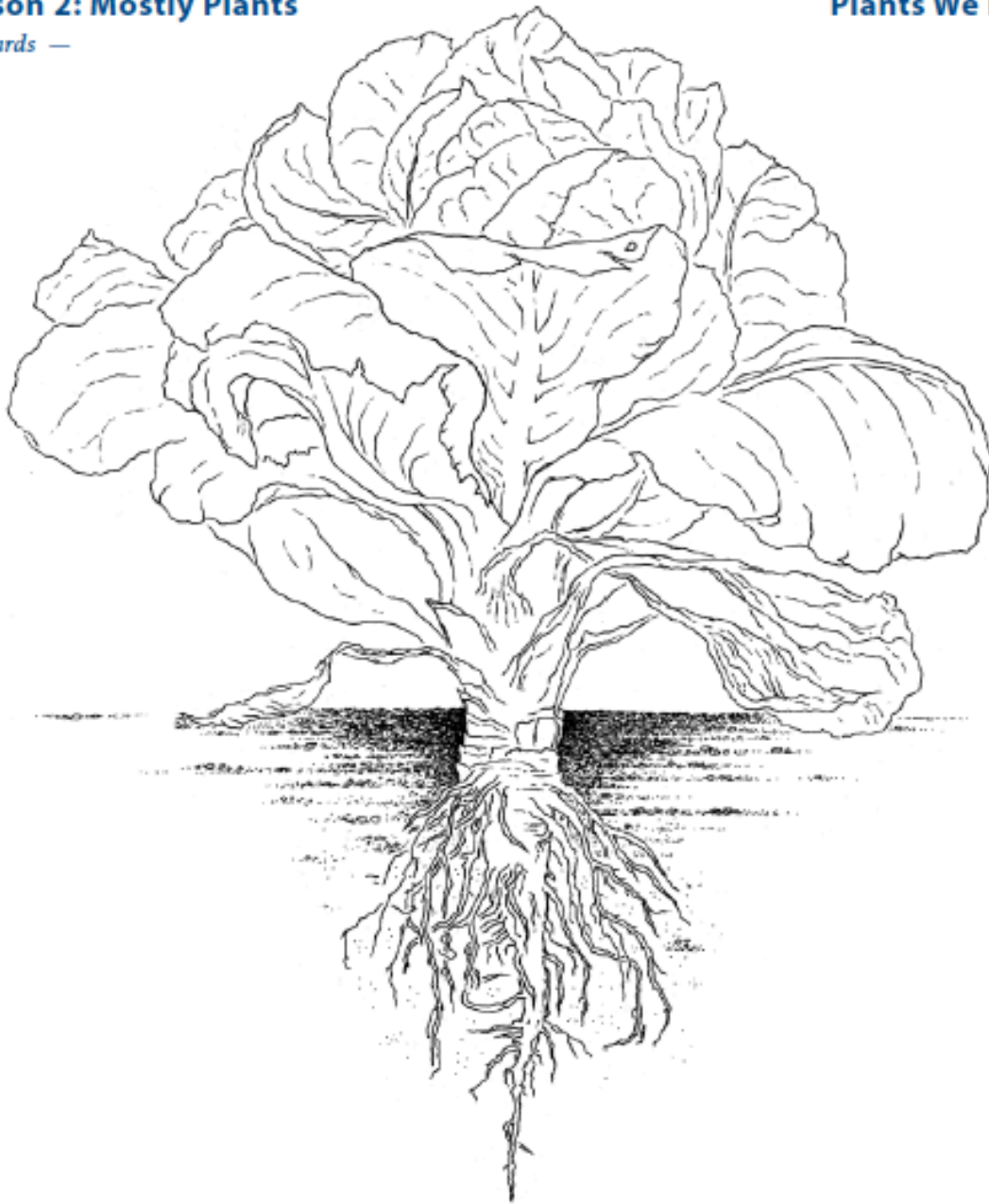
Examples of stems we eat: asparagus, garlic, ginger, white potato. Did you know that garlic and white potatoes are really underground stems of the plant? Garlic is a bulb. Potatoes are tubers that are underground swellings in the stem that store energy and other nutrients for the potato plant. Celery is a stalk, or leaf stem. The true stem of the celery plant is the base where all the stalks come out.

Nutritional benefits of eating stems: Asparagus are one of the first plants that come up in the spring. They are rich in potassium and phytonutrients. Other stems are also rich in these same nutrients.

Lesson 2: Mostly Plants

— Cards —

Plants We Eat



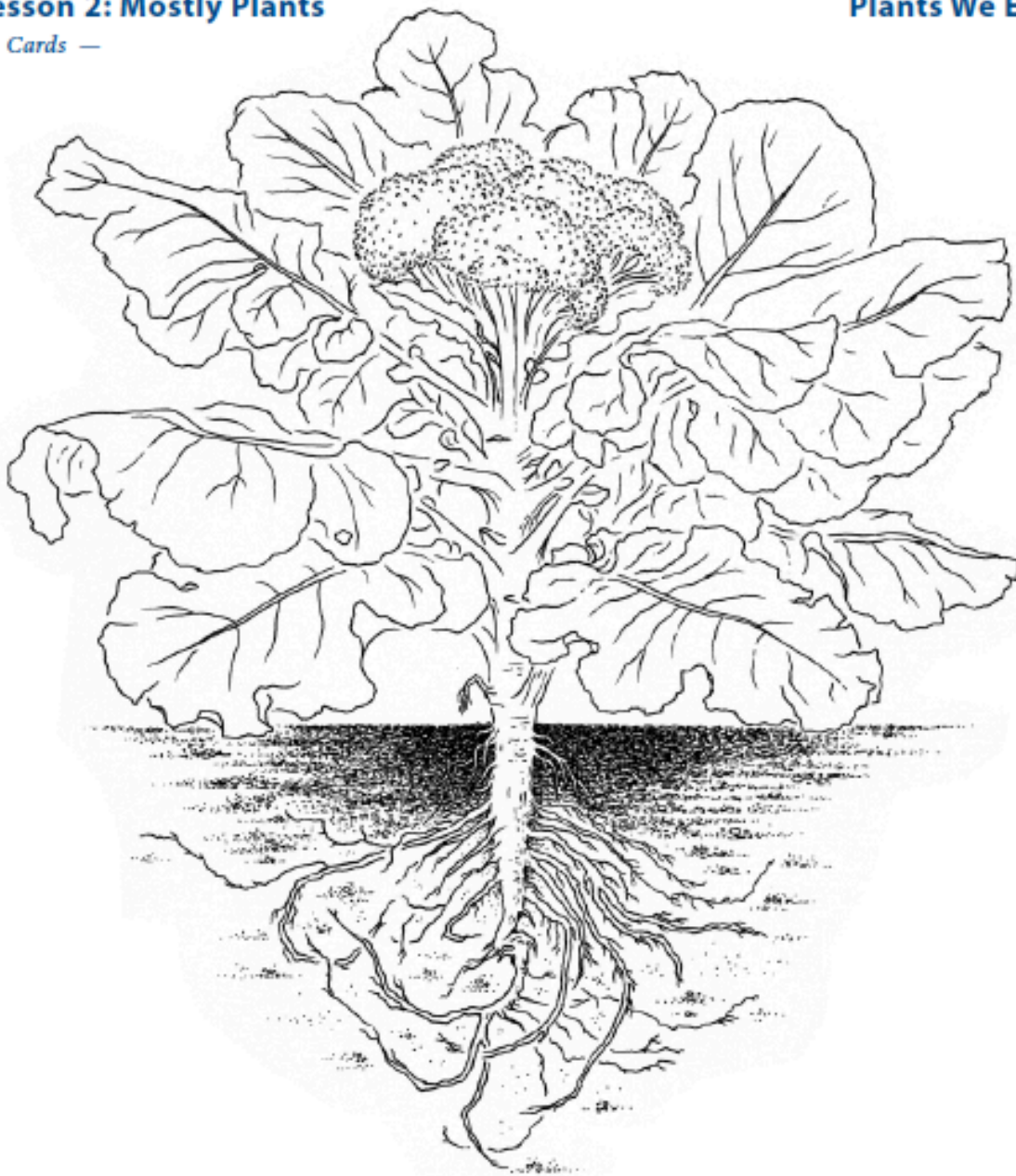
Examples of leaves we eat: basil, beet greens, cabbage, cilantro, collards, kale, lettuce, mustard, parsley, spinach

Nutritional benefits of eating leaves: Leaves are good sources of calcium, iron, many vitamins, and various phytonutrients. The darker green the leaves, the more packed with nutrients. Since leaves are low in calories and high in nutrients, they are one of the most nutrient dense foods we can eat. Leaves are available in the late spring, summer and fall, and might also be available in the winter in warmer climates.

Lesson 2: Mostly Plants

— Cards —

Plants We Eat



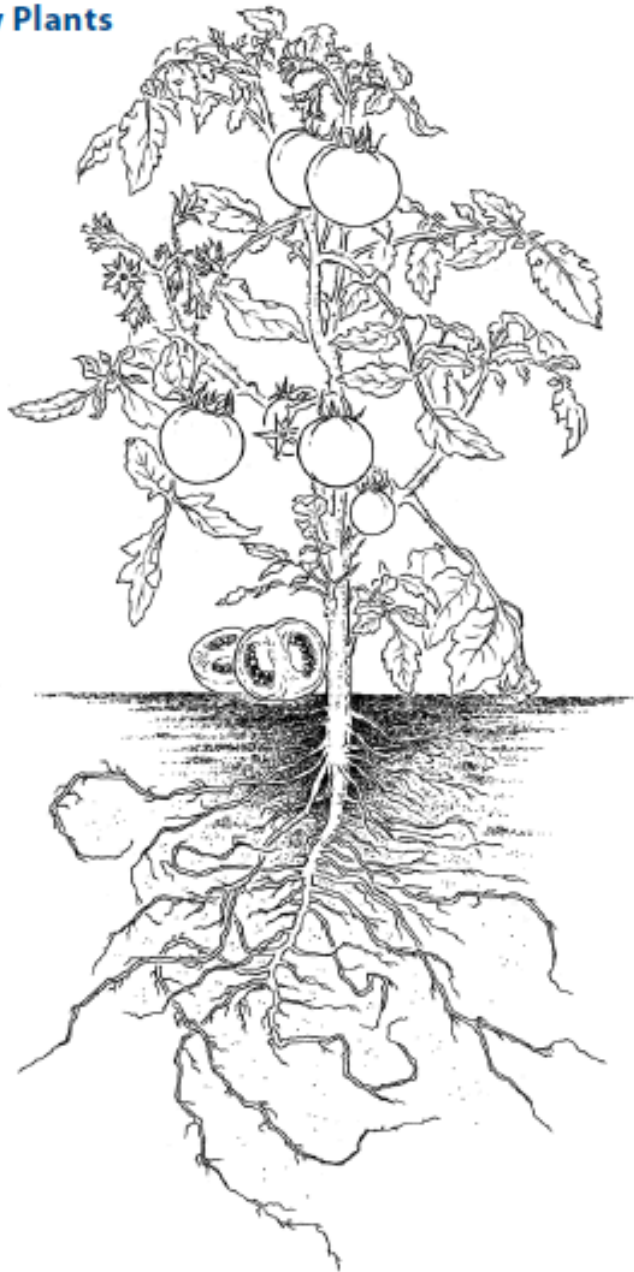
Examples of flowers we eat: borage, broccoli, calendula, cauliflower, chive blossoms, garlic blossoms, nasturtium, squash blossoms, violets

Nutritional benefits of eating flowers: Flowers come in various colors and shapes, and different flowers have different nutrients. Eating flowers can give us the phytonutrients that can help us stay healthy now and prevent diseases in the future.

Lesson 2: Mostly Plants

— Cards —

Plants We Eat



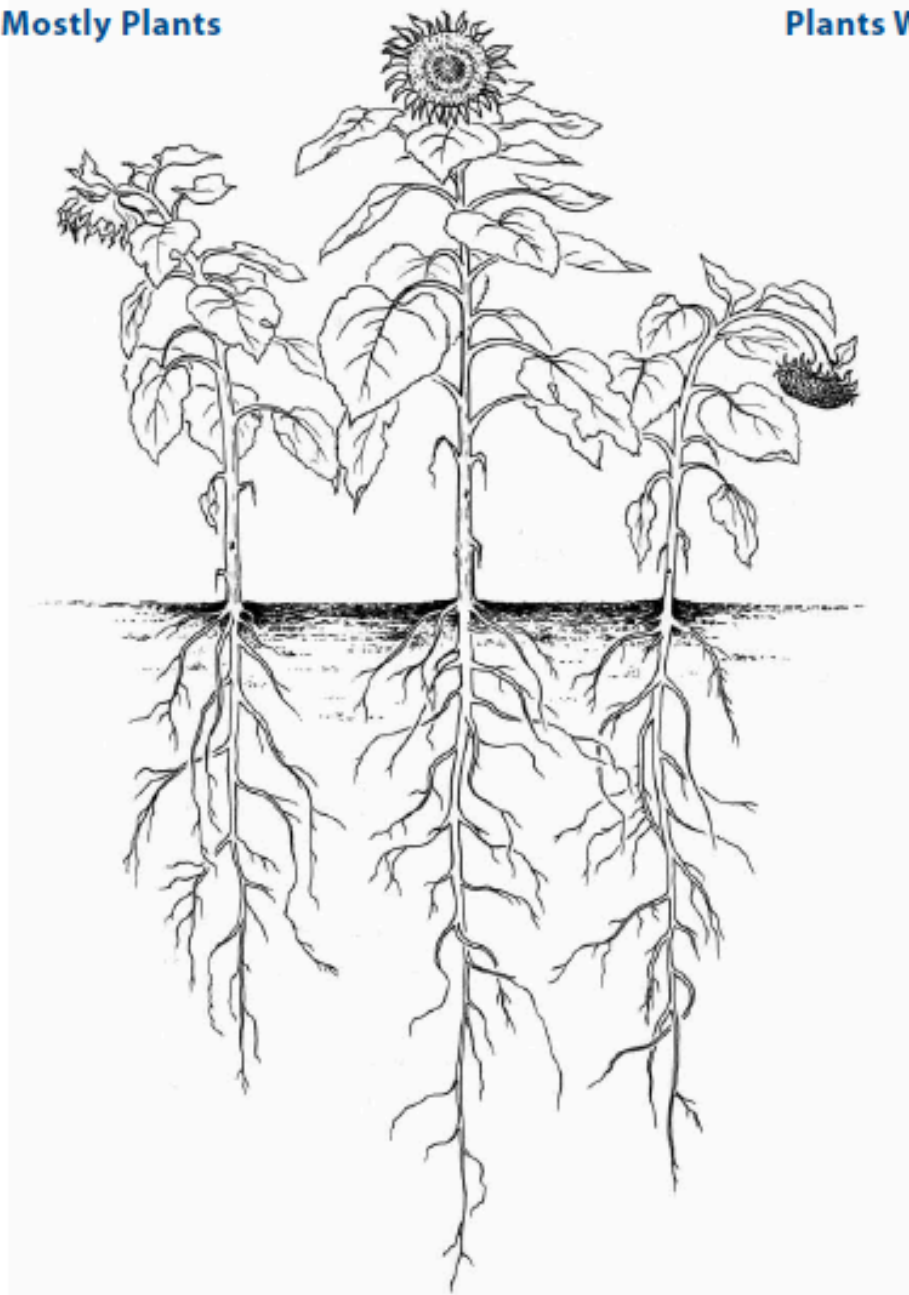
Examples of fruit we eat: vegetables that are the fruit of the plant: cucumbers, peppers, squash, string beans, tomatoes, zucchini; **fruit examples:** apples, blueberries, cantaloupe, grapes, oranges, peaches, pears, plums, raspberries, strawberries, watermelon

Nutritional benefits of eating fruit: Fruits come in so many different colors! Just about all fruits have fiber and complex carbohydrates. Various different colors are rich in different vitamins and phytonutrients. When having fruit, choose a wide variety of colors.

Lesson 2: Mostly Plants

— Cards —

Plants We Eat



Examples of seeds we eat: seeds that are grains: barley, oats, quinoa, rye, wheat; seeds that are good sources of protein: black beans, cashews, chick peas, kidney beans, peanuts, pinto beans, sunflower seeds

Nutritional benefits of eating seeds: Grains are a good source of complex carbohydrates, fiber, and B vitamins. The seeds that are the good sources of protein also have fiber and various phytonutrients. Beans are great as part of a meal, and nuts and seeds can be sprinkled over vegetables and/or grains as the protein part of a meal.