



November: K-2

All About Food Plants



South Carolina

Farm to School Lessons

Compiled by:
Clemson University Education Coordinators

Lynn R. Adcox, BS
Karen Bunch Franklin, MS
Yenory Hernandez-Garbanzo, PhD

Lesson Support Staff:

Brittney Linton, BS
Ginger Loberger, BS

Advisory Committee:

Katherine Cason, PhD, RD, LD
Kattia Blanco, MS
Sarah Griffin, MPh, PhD
Patsy Smith, MEd
Kristen Welch, MS
Marlyne Walker, MS, RD



Overview

Welcome to the South Carolina Farm to School November Nutrition Education Lesson. This lesson contains information & hands on activities for teaching grades K-2 about the benefits of eating healthy & all about plants. 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: 85 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: Increase the consumption of South Carolina fresh fruits & vegetables to half of their plate.

F2S Objectives

Students will be able to:

- * Identify parts of a plant & it's particular job.
- * Learn what parts of a plant are edible.
- * Describe how to create a plate that has mostly South Carolina fruits & vegetables.
- * Describe how a plant grows & seven basic requirements that are needed to grow plants.

Materials:

- * What We Know About Plants (Appendix A)
- * Plant Parts (Appendix B)
- * MyPlate Activity (Appendix C)
- * Build a Lunch (Appendix D)
- * Plant Part Titles (Appendix E)
- * Song & Poem (Appendix F)
- * Salad Grocery list: 1 head lettuce, 7 carrots, 1 turnip, 1 bunch celery, 1/2 bunch of broccoli, 1 pint cherry tomatoes, 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

1.2.1

2.2.2

5.2.1

7.2.1

SC State Standards

| | |
|------------|---|
| ELA 1-2.4 | Create responses to informational texts through a variety of methods. Use functional text features (including table of contents) |
| ELA 1-3.1 | Use pictures, context, and letter-sound relationships to read unfamiliar words. |
| ELA 1-3.3 | Use vocabulary acquired from a variety of sources. |
| ELA 1-3.20 | Use pictures and words to construct meaning. |
| ELA 1-6.1 | Generate how and why questions about a topic of interest. |
| ELA 1-6.6 | Follow one and two step oral directions. |
| SC 1-2.1 | Recall the basic needs of plants (including air, water, nutrients, space, and light) for energy and growth. |
| SC 1-2.2 | Illustrate the major structures of plants (including stems, root, leaves, flowers, fruits, and seeds). |
| SC 1-2.3 | Classify plants according to their characteristics (including what specific type of environment they live in, whether they have edible parts and what particular kinds of physical traits they have). |
| SC 1-2.4 | Summarize the life cycle of plants (including germination, growth, and the production of flowers and seeds). |
| SC1-2.6 | Identify characteristics of plants (including types of stems, roots, leaves, flowers, and seeds) that help them survive in their own distinct environments. |

Lesson Essential Components

| Lessons profile | Page(s) | Yes | No | Notes |
|---|---------|-----|----|---------------------------------|
| Palmetto Pick of the Month | 8 | ★ | | Tasting activities with turnips |
| Health Education Standards | 4 | ★ | | |
| SC-Cross Curricular Standards | 5 | ★ | | |
| SC-F2S Behavioral Goals | 4 | ★ | | |
| Cooking Activities | 8 | ★ | | |
| Tasting Activities | 8-9 | ★ | | |
| Physical Activity | | | ★ | |
| Food Safety | 8 | ★ | | |
| School Food Garden | | | ★ | |
| Student to Farmer Connections (i.e. field trips, talks) | 7-8 | ★ | | |
| Student to Chef Connections | | | ★ | |
| Farm to Cafeteria | | | ★ | |
| Provision of scientific knowledge/rationale | 7-8 | ★ | | |
| Risk and benefits about healthy behaviors | | | ★ | |
| Obstacles, Barriers & Solution | 7 | ★ | | |
| Family involvement and other supports | | ★ | | Family Activity Letter |
| Set goals and monitoring progress | | | ★ | |
| Other hands on activities: | 8-9 | ★ | | Team Activities, Presentations |

Let's Learn!

Why Plants Are Special !^{1 2}

Estimated Time: 10 mins

1. Ask students the following questions:
 - If there were no plants in the world, would we have food to eat?
2. Have students share their thoughts with the class. At first, students might say they can eat food from animals such as milk, cheese, & meat. They might also say they can eat food like candy & cookies. Be sure the students think about what animals eat, & what foods like candy & cookies are made from.
3. Have the students trace different foods back to plants. (Food Chain) For example, eggs come from chickens, & chickens eat grains such as corn & oats. Continue the discussion until you feel your students are convinced that any food they can think of can be traced back to plants.

Activity

Parts of Plants

Estimated Time: 15 mins

1. Use the Chart (Appendix A) & begin by asking the following questions:
 - What students know about plants?
 - What they want to know about the plant?
 - What they learned about plants?
2. Brainstorm with the children & the complete first two questions/columns. Display your chart in the classroom.
3. On the final day of teaching the November lesson, complete the last column & use the completed chart as a review of the entire unit.

Let's Learn!

Discuss Why We Should Eat More Plants Foods & Fewer Animals Foods ¹

Estimated Time: 5 mins

1. Explain to the students that although animal products (meat, eggs, & dairy products) are rich in proteins, vitamins, & minerals, they are often also

high in saturated fat(bad fat) & cholesterol. These can clog our blood vessels & increase our risk of heart attacks as we get older.

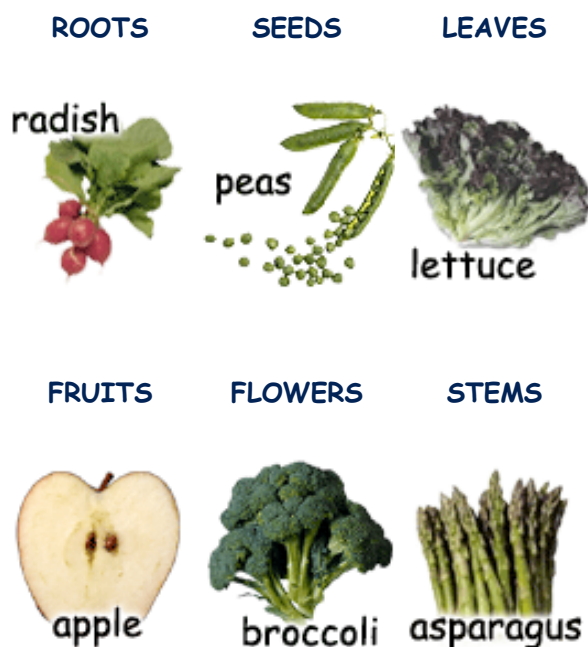
2. Plant foods are low in saturated fat & rich in dietary fiber, vitamins, & minerals.

Activity

Investigate Various Parts of Plants & Their Nutritional Benefits ²

Estimated Time: 15 mins

1. Project or hold up each of the **Plants We Eat** cards (will be sent electronically).
2. Ask the students to name the plant & the part of the plant we eat. (Point to it) (This activity serves as pre-assessment).
3. Point out that all the plants have roots, stems, & leaves, but only some have flowers, seeds & fruits.
4. Explain that for each of these plants we typically eat only one part. Two examples of plants that are completely edible are beets & turnips (Palmetto Pick of the Month). You may wish to show pictures of these two completely edible plants.
5. Read about each plant with given information on the bottom of each **Plants We Eat** card. (Appendix B).
6. After you have read about each plant, talk about & give students a chance to:
 - Name fruits or vegetables that belong to the plant part.
 - Discuss the nutrients people get from eating the part plant.
7. What we eat is made up of plants or parts of plants. Plants contain many nutrients that help us live healthy lives.
8. Plant Food Example Chart (Appendix E) shows real examples of plants that we eat.



Activity

Create a Plant-Based Plate

Estimated Time: 15 mins

1. Hand out the MyPlate activity sheet. (Appendix C) Have students draw their lunch from yesterday or today if they have already had lunch. Now take a look at the Choose MyPlate activity sheet & have students compare their drawings to this plate. Have the students notice that on MyPlate half the plate is fruits & vegetables because of all the nutrients that are in fruits & vegetables. Grains are about another quarter. Make at least half of these whole grains, such as brown rice & whole grain pastas and breads. Taken together, that is three-quarters of the plate! (Note that protein foods include animal sources, such as lean meat, poultry, fish, & lowfat dairy foods & plant sources, such as beans, seeds, & nuts.)
2. Explain that using this plate is a way to remind us that when we eat meals, we want to cover most of our plate with foods from plants. Encourage students to fill their plate with whole, real foods, following the proportions of MyPlate. Snacks of overly processed foods, such as sugary drinks, candy, chips &

processed packaged baked goods, are items that we can have once-in-a- while rather than as a regular part of what we eat.

3. Have the students draw in a portion of vegetable they like to fill in the vegetable section, a fruit to fill in the fruit section, a grain & a protein as well. That way they have a visual of what a plant-based plate looks like filled with foods they like. Encourage the students to share their plate with their families so they can also have plant-based meals. Suggest an action plan to follow Choose MyPlate for at least three lunches at school & two dinners in the next week.
4. Hand out and explain the “Build my Lunch” worksheet.
5. Ask students the following questions: How does it compare with MyPlate that was completed? Is it a challenge to choose a healthy meal & snacks when unhealthy food & snacks are available?

★ 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).
- Note:* If you are not comfortable having students cut the vegetables, please either ask parents/volunteers to assist with this activity or pre-cut the vegetables prior to activity.

Ingredients:

1 SC locally 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 area or window.
- When you see little green shoots, open the bag wider so that plants has room to grow & can breathe.
- Your plants need attention & care. You must water them properly and make sure your plants gets 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.

Let's Learn!

Fun Seed Songs

(Appendix F - optional songs/poems)

"I've Planted My Seeds"

Tune: "Rockabye, Baby"

I've planted my seeds.

All in a row.

I've watered them well

To make sure they grow.

High up above

The bright sun shines down

And soon tiny plants will poke through the ground.

"Parts of a Plant" by Meish Goldish
(sung to the tune of "Wheels on the Bus")

The roots of a plant grow underground.
Underground, underground,
The roots of a plant grow underground,
Roots are part of a plant.

The stems on a plant hold up the leaves,
Up the leaves, up the leaves.
The stems on a plant hold up the leaves,
Stems are part of a plant.

The leaves on a plant are making food,
Making food, making food.
The leaves on a plant are making food,
Leaves are part of the plant.

The flowers on a plant are growing seeds,
Growing seeds, growing seeds,
The flowers on a plant are growing seeds,
Flowers are part of a plant.

Evaluation

Formal Assessment:

1. Review **Parts of a Plant** & discuss the important job each part has to offer.
2. Review Gardening Journal.

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

¹ Adapted from Food Day Lessons (Lesson 2: Mostly Plants).

² Adapted from Growing Food Curriculum (Unit 2: Plants).

Resources



Books:

The Vegetables We Eat by Gail Gibbons

Oliver's Fruit Salad by Vivian French

The Tiny Seed by Eric Carle

<http://www.youtube.com/watch?v=cqE3Kcc8Zgg&feature=related>

The Magic School Bus Plants Seeds: A Book About How Living Things Grow, Joanna Cole

Ten Seeds by Ruth Brown. Learn about counting and more.

Jack's Garden by Henry Cole. A cumulative text (similar to 12 Days of Christmas) that explains how a garden works.

Tops and Bottoms by Janet Stevens. A trickster tale that also shows the differences between root, leaf, and stalk vegetables.

Growing Vegetable Soup by Lois Ehlert. An introduction to the garden for young folks.

Websites:

Digging Deeper into Plants

Activities and Resources to Extend this Lesson

Trade Vegetable Trading Cards <http://www.agmkt.state.ny.us/f2s/resources.html> A great way to get your students excited about eating vegetables is to collect cool trading cards with exciting facts about why to eat vegetables. Check them out!

Check out the Agriculture in the Classroom National Resource Directory <http://www.agclassroom.org/> The Agriculture in the Classroom National Resource Directory is an online, searchable database that lists hundreds of educational resources designed to help educators locate high quality classroom materials and information to increase agricultural literacy among their Pre-K through 12th grade students.

Start a School Garden <http://www.whitehouse.gov/blog/2009/08/31/story-white-house-garden> The White House Garden has inspired the nation to get gardening. Watch this inspirational video and seek out resources on school gardening in your school district or state.

Get Involved in Farm-to-School <http://www.farmtoschool.org/>

Farm-to-School connects schools (K-12) and local farms with the objective of serving healthy meals in school cafeterias; improving student nutrition; providing agriculture, health, and nutrition education opportunities; and supporting local and regional farmers. Talk to your school food service director about initiating a connection to local farms.

Teach About our Food Production system <http://blogs.tc.columbia.edu/cfe/education/nutrition-curriculum/growing-food/> Help your students appreciate the food production system by teaching Growing Food, a part of the Linking Food and the Environment (LiFE) Curriculum Series.

Create Art Inspired by Plant-based Foods <http://www.artandhealthyliving.org/> When we create art, we use observation skills and build appreciation for what we are observing. Use Studio In A School's Art & Healthy Living program as inspiration for your own ideas for connecting eating mostly plants with the creation of art.

Groove with Eat Like a Rainbow http://jaymankita.com/childrens_programs/concerts/rainbow.html

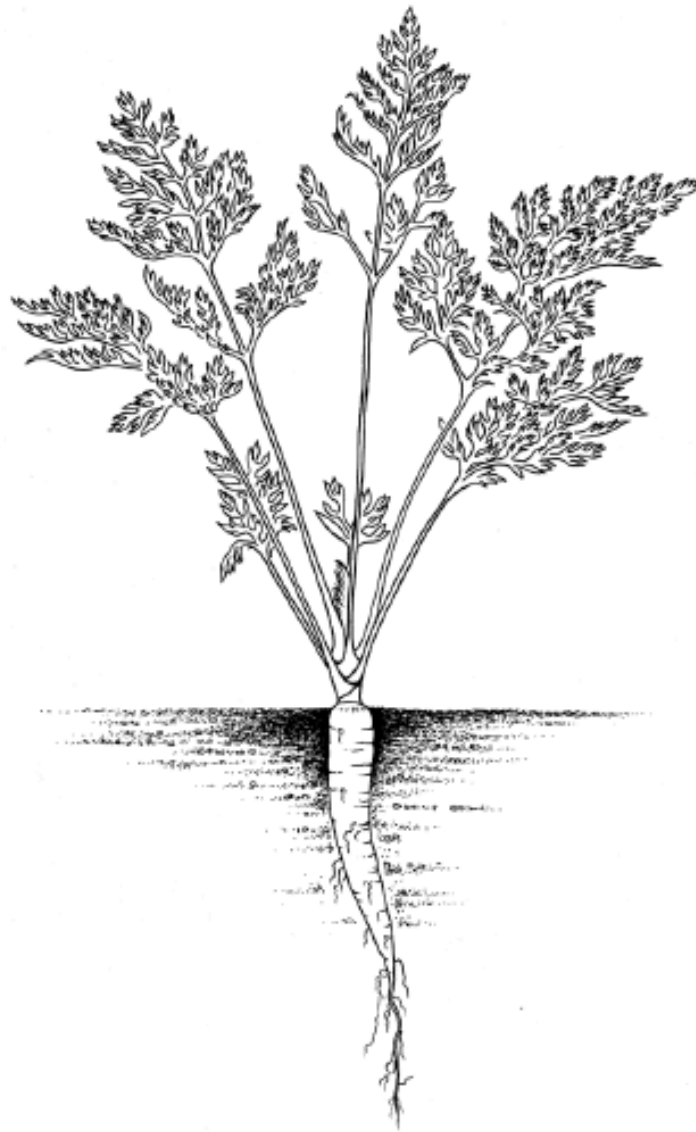
Eat Like A Rainbow is a rocking, funky danceable collection of quirky kids songs about healthy food and sustainable living. Crunchy rhythms and tasty harmonies, with a very nutritious groove throughout, really gets kids dancing! Food Day Lessons.

| What we know about plants | What we want to know about plants | What we learned about plants |
|---------------------------|-----------------------------------|------------------------------|
| | | |

Lesson 2: Mostly Plants

— Cards —

Plants We Eat



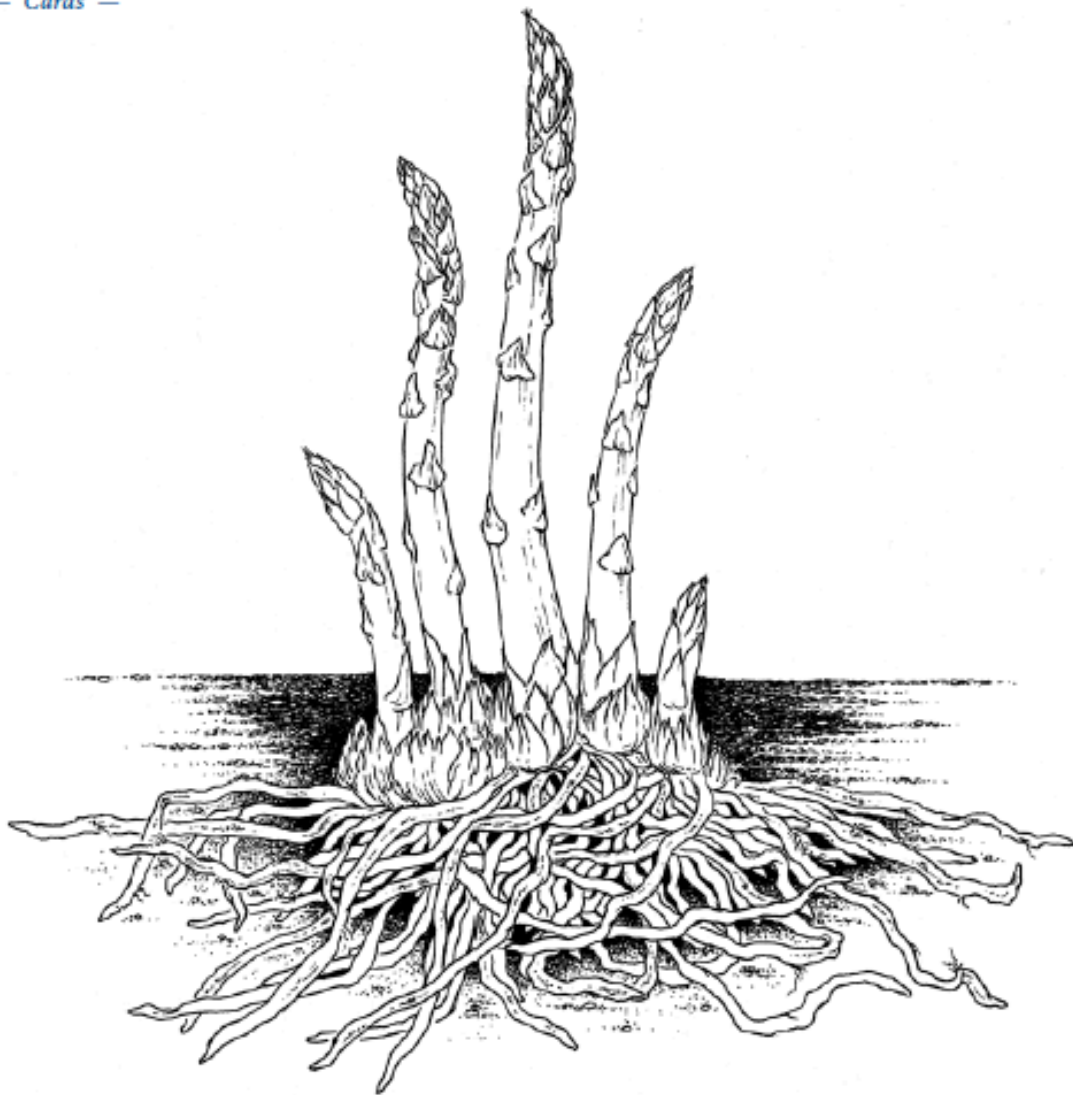
Examples of roots we eat: beet, carrot, cassava, horseradish, lotus root, parsnip, rutabaga, sweet potato, turnip

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



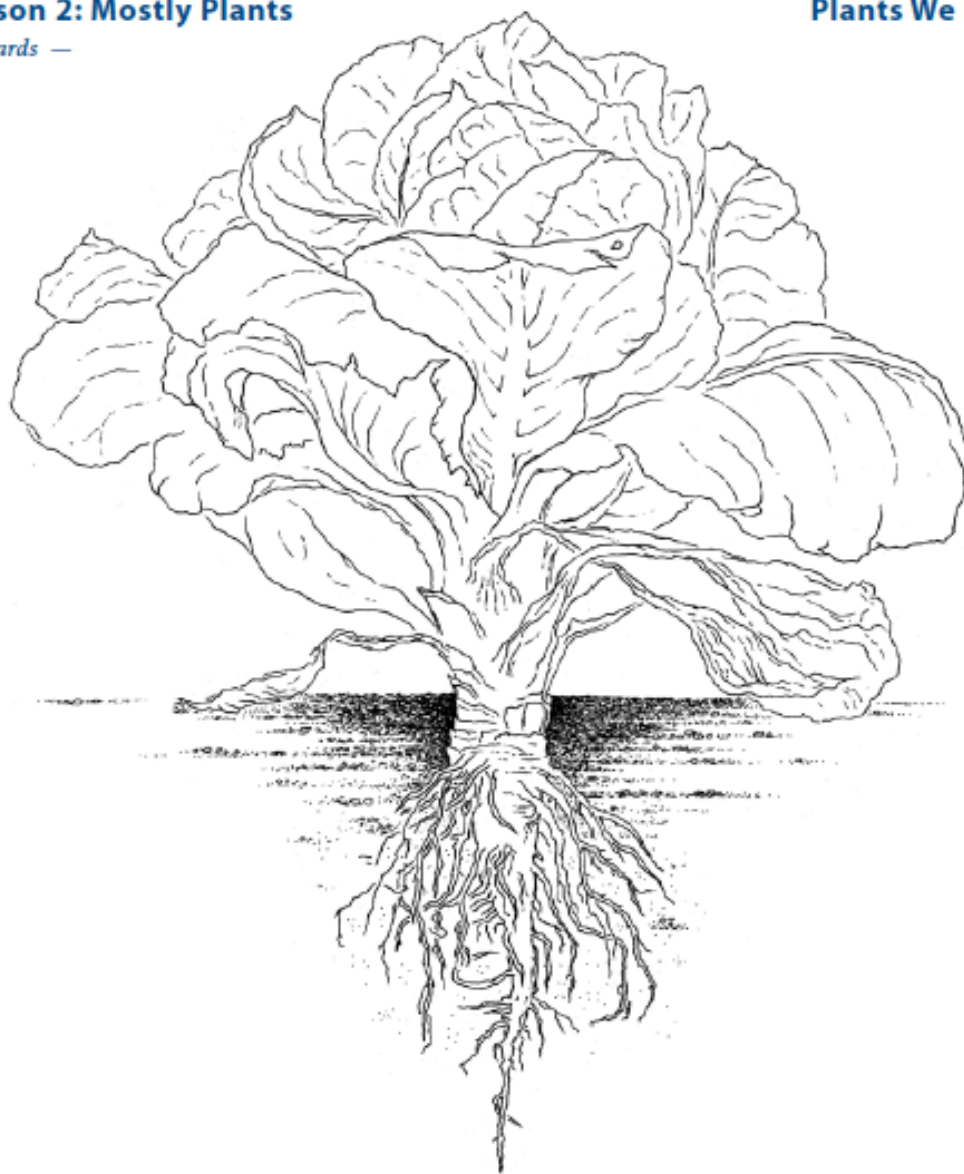
Examples of stems we eat: asparagus, garlic, ginger, white potato. Did you know that garlic and white potatoes are really underground stems of the plant? Garlic is a bulb. Potatoes are tubers that are underground swellings in the stem that store energy and other nutrients for the potato plant. Celery 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



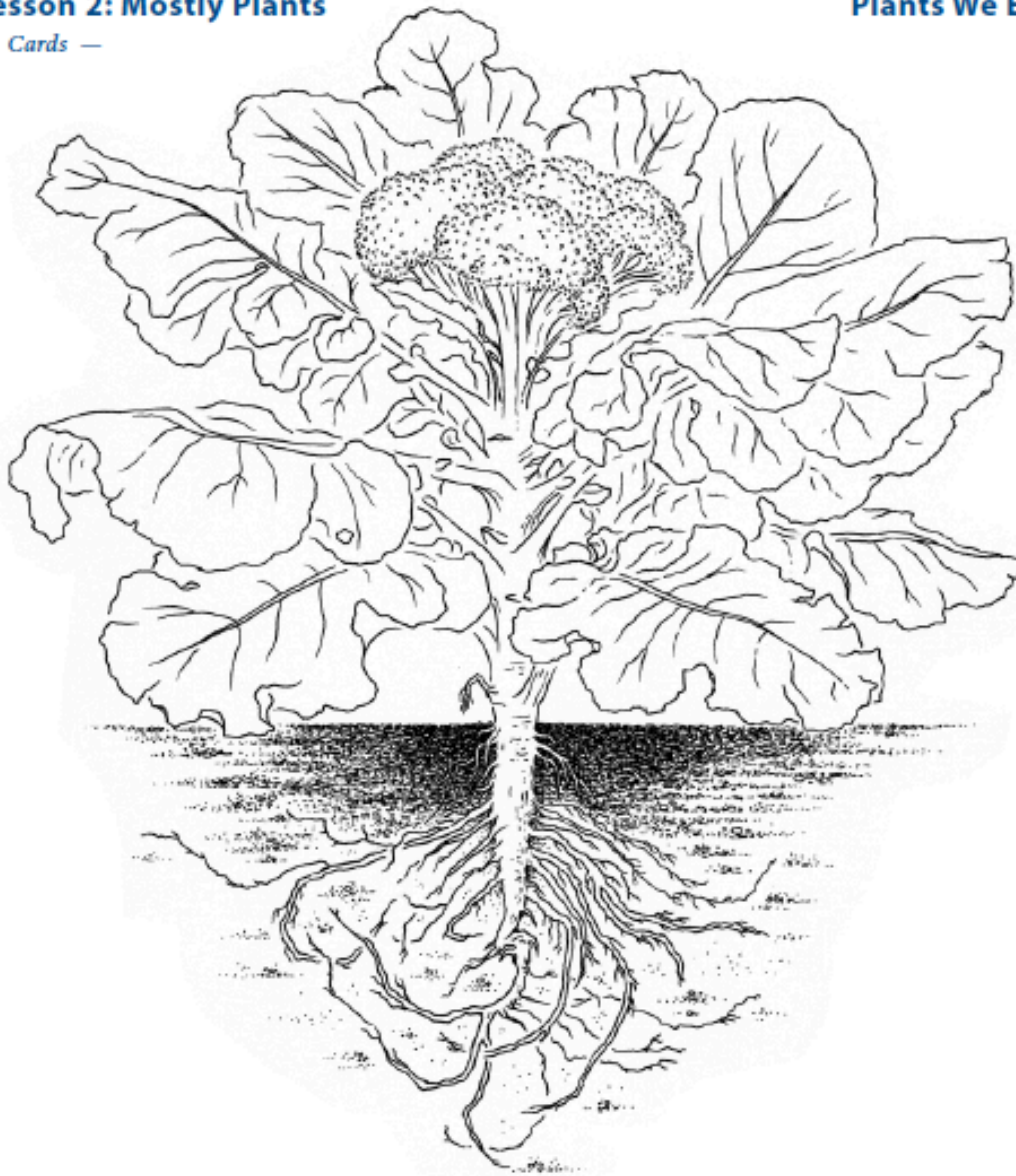
Examples of leaves we eat: basil, beet greens, cabbage, cilantro, collards, kale, lettuce, mustard, parsley, spinach

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



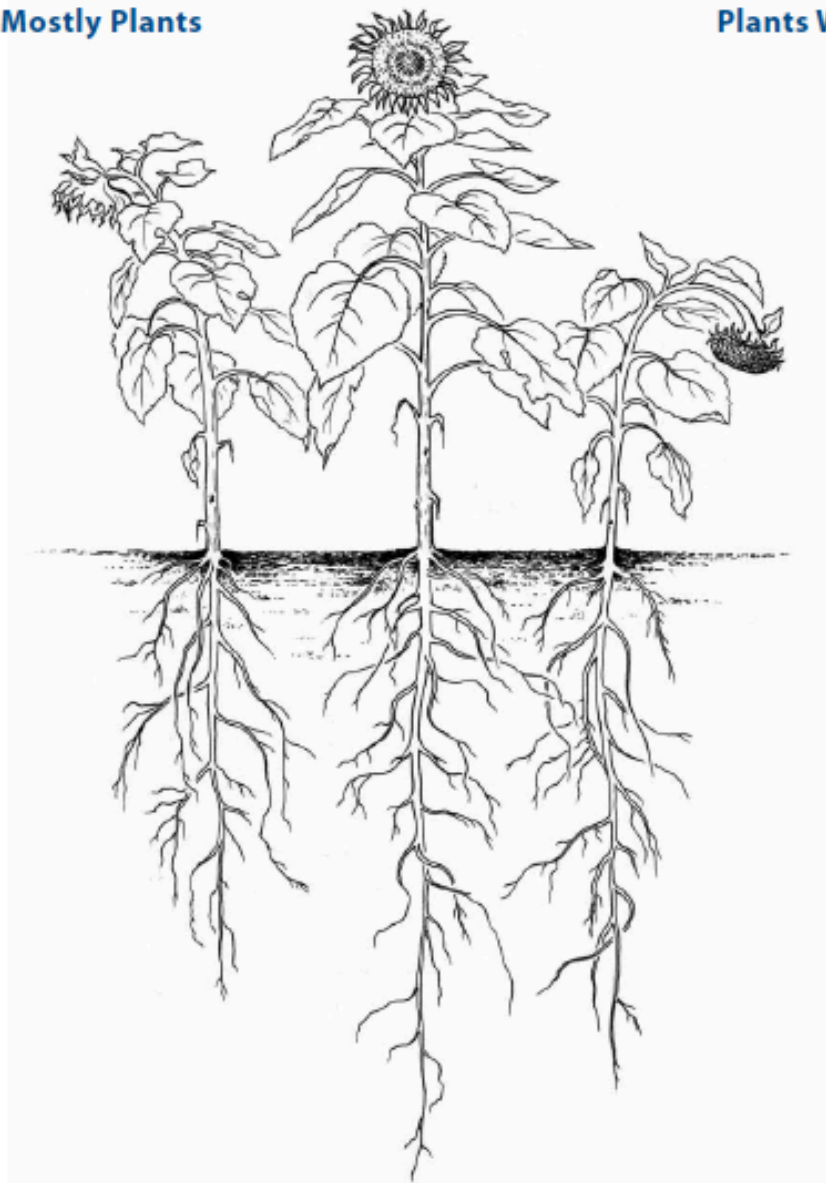
Examples of flowers we eat: borage, broccoli, calendula, cauliflower, chive blossoms, garlic blossoms, nasturtium, squash blossoms, violets

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 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

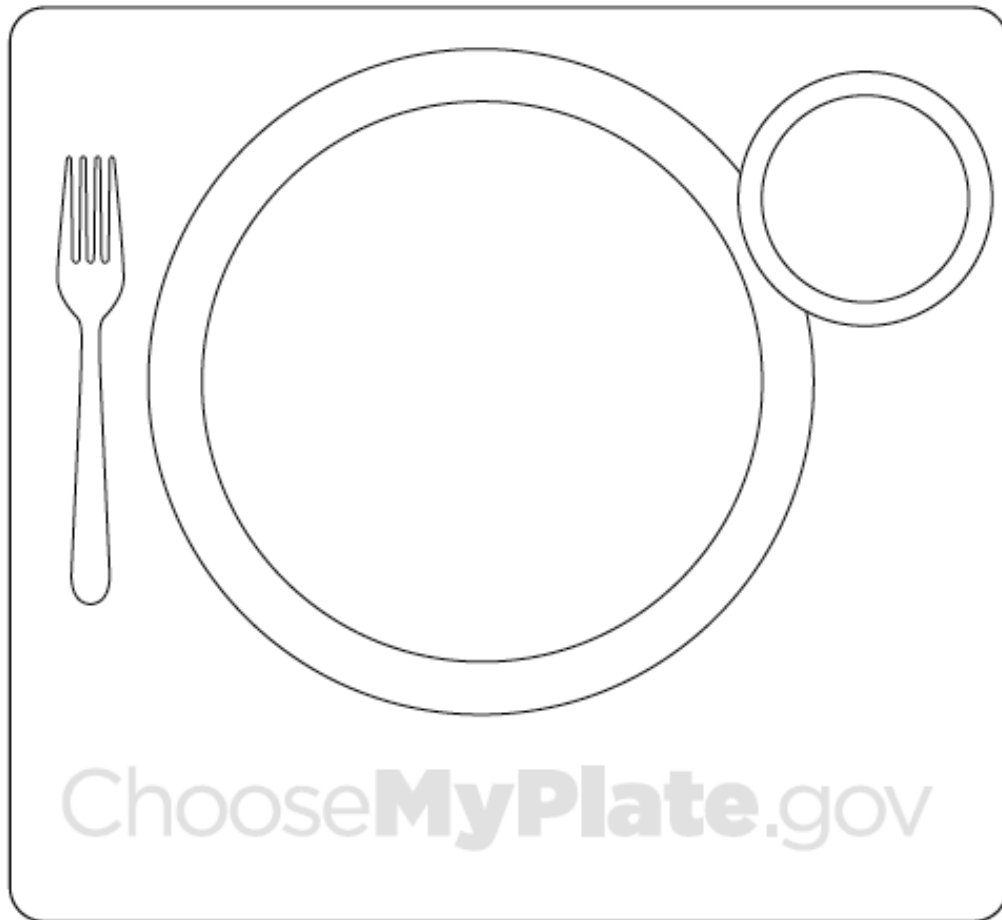
Nutritional benefits of eating seeds: Grains are a good source of complex carbohydrates, fiber, and B vitamins. The seeds that are the good sources of protein also have fiber and various phytonutrients. Beans are great as part of a meal, and nuts and seeds can be sprinkled over vegetables and/or grains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

Appendix C

— Activity Sheet —

| | |
|------|------|
| Name | Date |
|------|------|

Below is a picture of a plate and a cup. Draw what you ate and drank for lunch yesterday or today. Think about how much space each item took on the plate and make your drawing as accurate as possible.



Appendix D

BUILD A LUNCH

School _____ Grade _____ Age _____



BUILD A LUNCH

Pick the 4 foods you would most like to eat for lunch,
by drawing a line from the food to the lunch box.



Soda pop



Apple or Banana



Hot Dog



Water



Bagel



Cheese



Chips



Cookies



Pizza



Sandwich



Cake



Veggies & Dip or Salad



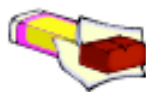
Yogurt



Hamburger



French Fries



Chocolate Bar



Juice



Muffin



Candy



Milk



Other Fruit

Source: Annapolis Valley Health Promoting School Project

Appendix E

What parts of the plants do we eat?

Here is a list of edible plants. Have you ever eaten or seen any of these plants?

| ROOTS | STEMS | LEAVES | FLOWERS | FRUITS | SEEDS |
|----------------|-----------|----------|-----------------|--------------|-----------------|
| Carrots | Celery | Kale | Broccoli | Tomato | Lima Beans |
| Beets | Rhubard | Lettuce | Cauliflower | Apple | Peas |
| Turnips | Onions | Spinach | Squash blossoms | Cucumber | Green Beans |
| Rutabagas | Garlic | Cabbage | Violets | Strawberries | Sunflower Seeds |
| Sweet Potatoes | Asparagus | Collards | Chives Blossoms | Watermelon | Black-eyed Peas |
| Radish | Ginger | Mustard | Garlic Blossoms | Peaches | Pinto Beans |

Appendix F

Songs and Poem

"I'm a Little Seed"

tune: "I'm a Little teapot"

I'm a little seed deep in the ground,
Warmed by the sunshine, yellow and round,
Cooled by the raindrops falling sown,
Time to raise my head and Look around.

"Planting Seeds"

First we dig up the soil
Cheered by spring air.
(Pantomime digging up the soil)
Then we rake and we rake and we rake.
(Pantomime raking.)
Next we plant our seeds
With the greatest of care.
(Pantomime planting seeds in the ground.)
Then we wait and we wait and we wait.
(Fold arms and wait.)
Under the ground
The young seeds grow.
(Curl up on the floor.)
Then slowly they start to rise.
(Slowly rise up.)
Soon, up they sprout
To greet the sun.
(Stand up to full height and spread arms.)
Oh what a lovely surprise!

My Favorite Plant (Poem)

I know the names of many plants,
Like carrots, corn and peas,
Roses, grass and dandelions,
But my favorite plants are trees.
'Cause trees give shade, trees give wood,
Trees give fruits and nuts-mmm, good!
Trees give homes to living things,
trees hold tree houses, trees hold swings,
Follow me now, and you will see,