Field Trip #2

Did You Eat Your Veggies Today?

MAIN IDEAS

- Kentucky farms produce nutritious foods that we should eat daily.
- Because of Kentucky's climate, certain fruits and vegetables are produced and available at specific times of the year.
- Some fruits and vegetables cannot be produced in Kentucky.

BEFORE WATCHING THE VIDEO

Ask students if they eat vegetables and to name them. Make a list on the board. Then ask which of those vegetables may be grown in Kentucky.

Background Information - Nutrition of Vegetables

Source: ChooseMyPlate.gov

Eating vegetables provides health benefits – people who eat more vegetables and fruits as part of an overall healthy diet are likely to have a reduced risk of some chronic diseases. Vegetables provide nutrients vital for health and maintenance of your body.

Nutrients:

- Most vegetables are naturally low in fat and calories. None have cholesterol. (Sauces or seasonings may add fat, calories, and/or cholesterol.)
- Vegetables are important sources of many nutrients, including potassium, dietary fiber, folate (folic acid), vitamin A, and vitamin C.
- Diets rich in potassium may help to maintain healthy blood pressure. Vegetable sources of potassium include sweet potatoes, white potatoes, white beans, tomato products (paste, sauce, and juice), beet greens, soybeans, lima beans, spinach, lentils, and kidney beans.
- Dietary fiber from vegetables, as part of an overall healthy diet, helps reduce blood cholesterol levels and may lower risk of heart disease. Fiber is important for proper bowel function. It helps reduce constipation and diverticulosis. Fiber-containing foods such as vegetables help provide a feeling of fullness with fewer calories.
- Folate (folic acid) helps the body form red blood cells. Women of childbearing age who may become pregnant should consume adequate folate from foods, and in addition 400 micrograms of synthetic folic acid from fortified foods or supplements. This reduces the risk of neural tube defects, spina bifida, and anencephaly during fetal development.
- Vitamin A keeps eyes and skin healthy and helps to protect against infections.
- Vitamin C helps heal cuts and wounds and keeps teeth and gums healthy. Vitamin C aids in iron absorption.

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Kentucky Academic Standards

PRACTICAL LIVING & VOCATIONAL STUDIES

Nutrition

Consumer Decisions

MATH

Measurement and Data: Represent and Interpret Data.

SCIENCE

Structure, Function, and Information Processing

Structure and Properties of Matter

Interdependent Relationships in Ecosystems

Inheritance and Variation of Traits

Health Benefits:

- Eating a diet rich in vegetables and fruits as part of an overall healthy diet may reduce risk for heart disease, including heart attack and stroke.
- Eating a diet rich in some vegetables and fruits as part of an overall healthy diet may protect against certain types of cancers.
- Diets rich in foods containing fiber, such as some vegetables and fruits, may reduce the risk of heart disease, obesity, and type 2 diabetes.
- Eating vegetables and fruits rich in potassium as part of an overall healthy diet may lower blood pressure, and may also reduce the risk of developing kidney stones and help to decrease bone loss.
- Eating foods such as vegetables that are lower in calories per cup instead of some other higher-calorie food may be useful in helping to lower calorie intake.

Background Information - Vegetable Production

While climate conditions can be improved by using greenhouses and plastic tunnels (high or low tunnels), most produce in Kentucky is grown when the weather provides the correct conditions. Kentucky winters are generally too cold to grow most produce (although "cold-hardy" root crops and cruciferous vegetables can survive with minimal damage while using tunnels). Likewise, some vegetable crops do not like overly hot weather, which we may have in July and August. Vegetables also require managed water resources and careful attention to pests and disease.

This video shows how Mary Courtney, a vegetable farmer in Shelby County, works to provide fresh produce to her customers. The video was filmed in late September, as harvest season started to wind down.

WHILE WATCHING THE VIDEO

Have students watch for answers to the following questions while they watch the video, or they may write answers on a piece of paper:

1. How many different vegetables does Mary Courtney grow?
2. Name two ways Mary keeps her vegetable plants healthy.
3. What new vegetable would you want to try from Mary's farm?

AFTER WATCHING THE VIDEO

OPTION 1: PLANT PARTS WE EAT

Grade Level(s): K - 4

Estimated Time - 60 minutes

Purpose

- Students will identify and describe the major parts of plants we eat: roots, stems, leaves, flowers and fruits.
  LS1.A: Structure and Function (1-LS1-1) - All organisms have external parts…Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.
  4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
  2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- Students will learn that vegetables are part of a healthy diet. *PL.Nutrition*

Materials

- "Parts of a Flowering Plant" Diagram - Copy provided in **Companion Materials** packet.
- "Parts of a Flowering Plant" Activity Sheet
- "Plant Parts We Eat" Activity Sheet

Optional Materials

- BOOK - *Tops and Bottoms* by Janet Stevens
- BOOK - *Plants Feed Me* by Lizzy Rockwell
- A variety of edible plants that are roots, stems, leaves, flowers, and fruits (see examples in vocabulary).

Vocabulary

Flowers: allow the plant to reproduce by producing seeds; edible examples include broccoli, cauliflower

Fruit: hold the seeds of a plant; examples include eggplant, tomatoes, pumpkins, squash, cucumbers, peppers

Leaves: soak up the sun's energy and produce food for the plant; examples include lettuce, cabbage, spinach, mustard greens, kale

Roots: absorb water and anchor the plant; examples include radishes, beets, carrots, parsnips

Stems: transport water and food throughout the plant; examples include asparagus, celery

Icebreaker

Collect a variety of produce that represents different parts of the plant. Items could include asparagus (stem), squash or peppers (fruit), carrots (root), and cabbage (leaves). Display these vegetables and ask the following questions:

- "Where have you seen these items before?" (Grocery store, farmers' market, gardens, fields)
- "What fruits and vegetables are your favorite to eat?" (Answers will vary)

List their answers on the board and count them.

ACTIVITY 1 - Parts of Plant Diagram

Background Information - Many foods we eat are plants. Plant-based 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 flowers. Farmers grow and harvest many plant-based foods such as carrots, green beans, kale, sweet potatoes, and tomatoes, which are part of a healthy diet.

Each of these food items are grown from a plant either above or below the surface of the soil.

Roots are usually found underground with the functions of anchoring the plant and absorbing water and nutrients from the soil. In some plants, they also serve as a storage area for food for the plant. In others, such as rutabagas, radishes, carrots, and sugar beets, the root is the crop.

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. Edible stems that grow above ground include asparagus, broccoli, and cauliflower.

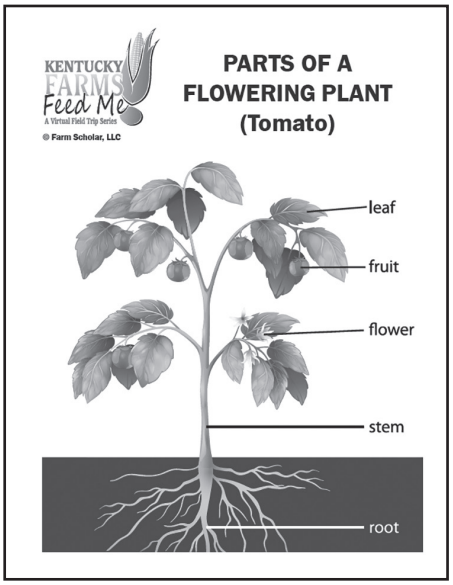
The leaves of a plant serve as solar panels. They collect sunlight and use this solar energy to power photosynthesis. Photosynthesis occurs in the leaf. The plant takes in water and carbon dioxide. The sun's energy causes a chemical reaction which converts the water and carbon dioxide into glucose (food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

oxygen. The plant uses the glucose to grow and the oxygen is given off into the environment. Humans eat several plant-based foods with edible leaves such as cabbage, kale, lettuce, and spinach.

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. Broccoli and cauliflower flowers, known as the flowerets, can be eaten.

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. Humans enjoy eating the following fruits such as apples, strawberries, watermelons, and grapes, just to name a few.

Procedures



1. Ask "Why should we eat vegetables and fruits?" 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 illness. Make sure they realize that vegetables are plants.
2. Show the "Parts of a Flowering Plant" diagram or display the vegetables and fruits used in the Icebreaker. Emphasize that these fruits and vegetables are grown and harvested by farmers.

   Help students understand the major purpose of each part:

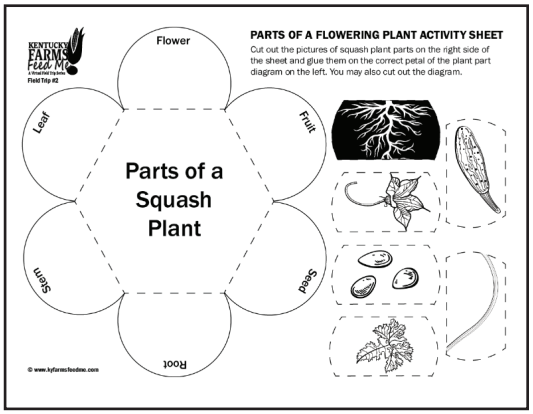
   Roots – absorbs water and nutrients, anchors plant, transports nutrients, & stores food

   Stem – transports water and food

   Leaves – soaks up the sun's energy, makes food

   Flower – produces seeds

   Fruit – holds seeds



3. Ask students to complete the "Parts of a Flowering Plant" activity sheet.
4. Go back to your display of vegetables and fruits. Ask for student volunteers or call on students to identify which part of the plant each vegetable or fruit represents. (Example: lettuce is a leaf, beets are roots, etc). Sort the vegetables and fruits into the five clear containers labeled with the major plant parts.
5. 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.)

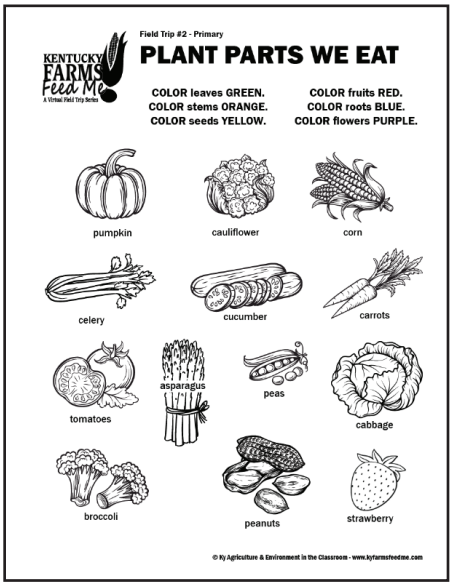
ACTIVITY 2: Read *Tops and Bottoms*

1. Show students the book *Tops and Bottoms* by Janet Stevens. Tell students that this book is about a rabbit and a bear who decided to grow some plants to eat.

   Before reading, ask the students:

   - "Which vegetables would be tops?" (stems, leaves, flowers)
   - "Which vegetables would be bottoms?" (roots)

2. Read the book *Tops and Bottoms*. At the conclusion of the book, ask the students:
    - "What are some plants that have good "bottoms" to eat?"
    - "What are some plants that have good "tops" to eat?"
    - "What are some plants that have good "middles" to eat?"
    - "How is the Hare similar to 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.)
    - "What lessons can we learn from the Bear?" (He is not knowledgeable about plant parts so he does not get as much healthy and tasty food as the Hare. He is also lazy. The story suggests that laziness will harvest little.)
    - "How do the decisions that the Hare and Bear make impact their lives?" (Listen to students' observations!)
3. Give students the "Plant Parts We Eat" activity sheet. This can serve as an assessment to determine the level of understanding the students gained on plant parts.
4. At the conclusion of this activity, review and summarize the following key concepts:
    - Roots, stems, leaves, flowers, and fruits of some plants are edible. These plant-based foods need soil, water, and sunlight to produce their delicious and healthy food items.
    - Farmers grow and harvest vegetables and fruits for us to eat.
    - Eating vegetables and fruits are part of a healthy diet.
    - Some plants have edible tops, middles, and bottoms.


Field Trip #2 - Primary

PLANT PARTS WE EAT

COLOR leaves GREEN. COLOR stems ORANGE. COLOR seeds YELLOW.

COLOR fruits RED. COLOR roots BLUE. COLOR flowers PURPLE.

pumpkin, cauliflower, corn, celery, cucumber, carrots, tomatoes, asparagus, peas, cabbage, broccoli, peanuts, strawberry

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Enriching Activities

- Wash the vegetables and fruits thoroughly and have the students also wash their hands thoroughly. Prepare a plant parts salad or other healthy snack with the vegetables and fruits used in the lesson.
- Distribute copies of the school lunch menu for the week or month to the students. Ask them to identify the vegetables and fruits being served and determine whether they are a root, stem, leaf, fruit, or a flower.

OPTION 2: MAKE A HARVEST CHART

Grade Level(s): 3+

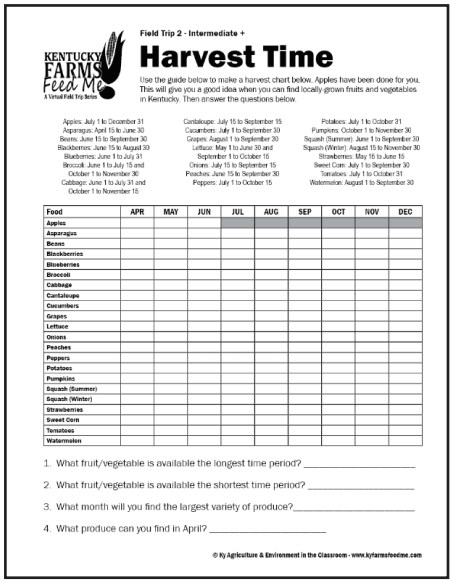
Estimated Time - 30 minutes

Purpose

- Students will create a chart that shows when different produce are available during the growing season using typical production methods. *Math 3.MD.3 - Represent and Interpret Data*
- Students will analyze the chart to answer questions about locally-grown produce.

Materials

- "Harvest Time" Activity Sheet


Field Trip 2 - Intermediate +

Harvest Time

Use the guide below to make a harvest chart below. Apples have been done for you. This will give you a good idea when you can find locally grown fruits and vegetables in Kentucky. Then answer the questions below.

Apples: July 1 to December 31
Asparagus: April 15 to June 30
Beans: June 15 to September 30
Blackberries: June 15 to August 30
Blueberries: June 1 to July 31
Broccoli: June 1 to July 15 and October 1 to November 30
Cabbage: June 1 to July 31 and October 1 to November 15
Cantaloupe: July 15 to September 15
Cucumbers: July 1 to September 30
Grapes: August 1 to September 30
Lettuce: May 1 to June 30 and September 1 to October 15
Onions: July 15 to September 15
Peaches: June 15 to September 30
Peppers: July 1 to October 15
Potatoes: July 1 to October 31
Pumpkins: October 1 to November 30
Squash (Summer): June 1 to September 30
Squash (Winter): August 15 to November 30
Strawberries: May 15 to June 15
Sweet Corn: July 1 to September 30
Tomatoes: July 1 to October 31
Watermelon: August 1 to September 30

Food	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
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Pumpkins									
Squash (Summer)									
Squash (Winter)									
Strawberries									
Sweet Corn									
Tomatoes									
Watermelon									

1. What fruit/vegetable is available the longest time period? _____
2. What fruit/vegetable is available the shortest time period? _____
3. What month will you find the largest variety of produce? _____
4. What produce can you find in April? _____

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Background Information

Since many of us visit the grocery store and can find most fruits and vegetables at any time of the year, we may not realize that only certain foods can be grown in certain places at particular times of the year. Environments can be altered to grow plants longer by using greenhouses and plastic tunnels (called high tunnels or low tunnels), which may be heated. These systems cost the farmer more money to produce a crop, and the farmer will need to pass that cost to the consumer by selling it for a higher price.

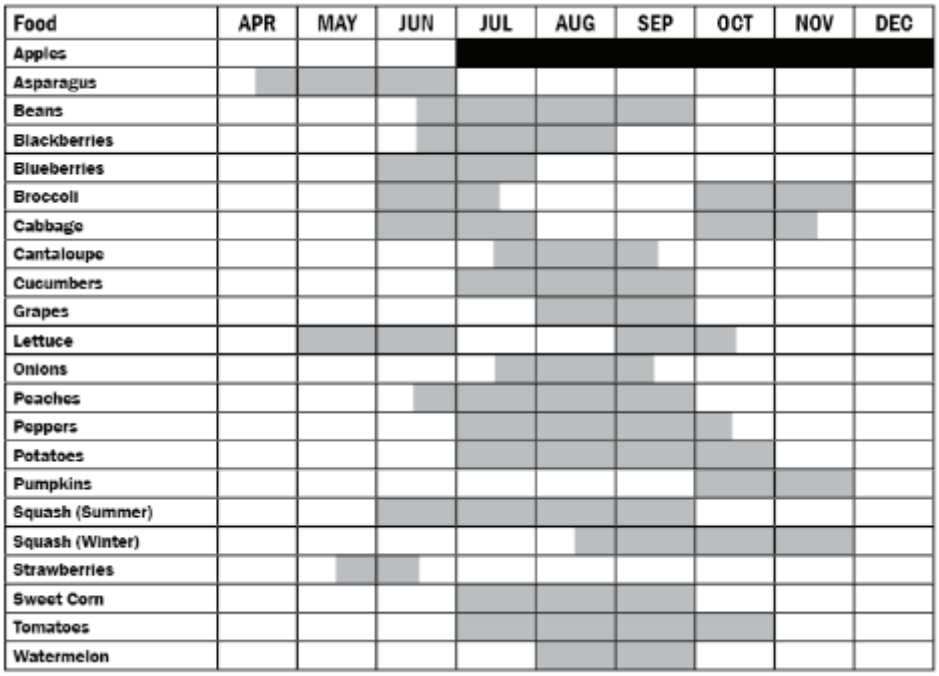
Bananas, avocados, citrus fruits, and pineapples are examples of fruits that are not regularly grown in Kentucky because they require tropical climates to thrive. Transportation costs are also passed on to the consumer.

Enjoying fresh produce also comes at a higher cost. Some fruits and vegetables spoil very quickly and requires specific storage conditions, such as temperature and moisture, to slow spoilage. Produce may be preserved by drying, canning, and freezing to reduce food waste and cost.

Procedures

1. Ask “What fruits and vegetables are grown in Kentucky?” and “What fruits and vegetable are not grown in Kentucky?” Why? Discuss climate and soil types.
2. Give students the “Harvest Time” activity sheet. Students will use the data to create a harvest calendar. The time a fruit or vegetable is available will be marked with a colored block. Encourage students to use different colors for each type of produce.
3. DISCUSSION - CRITICAL THINKING AND DECISION MAKING - If we only had access to produce grown within Kentucky, how would we be able to enjoy produce year round? Canning, freezing and drying are options. Are the canned, frozen, and dried produce at the grocery store any different than what you could preserve at home? Not likely. Some people, however, want to enjoy fresh produce no matter what time of the year it is. How can this happen? Because of our modern transportation system, we can enjoy foods from across the world, but at a cost.

Harvest Time Activity Sheet Answer Key



1. What fruit/vegetable is available the longest time period?

   apples

2. What fruit/vegetable is available the shortest time period?

   strawberries

3. What month will you find the largest variety of produce?

   August

4. What produce can you find in April?

   Asparagus

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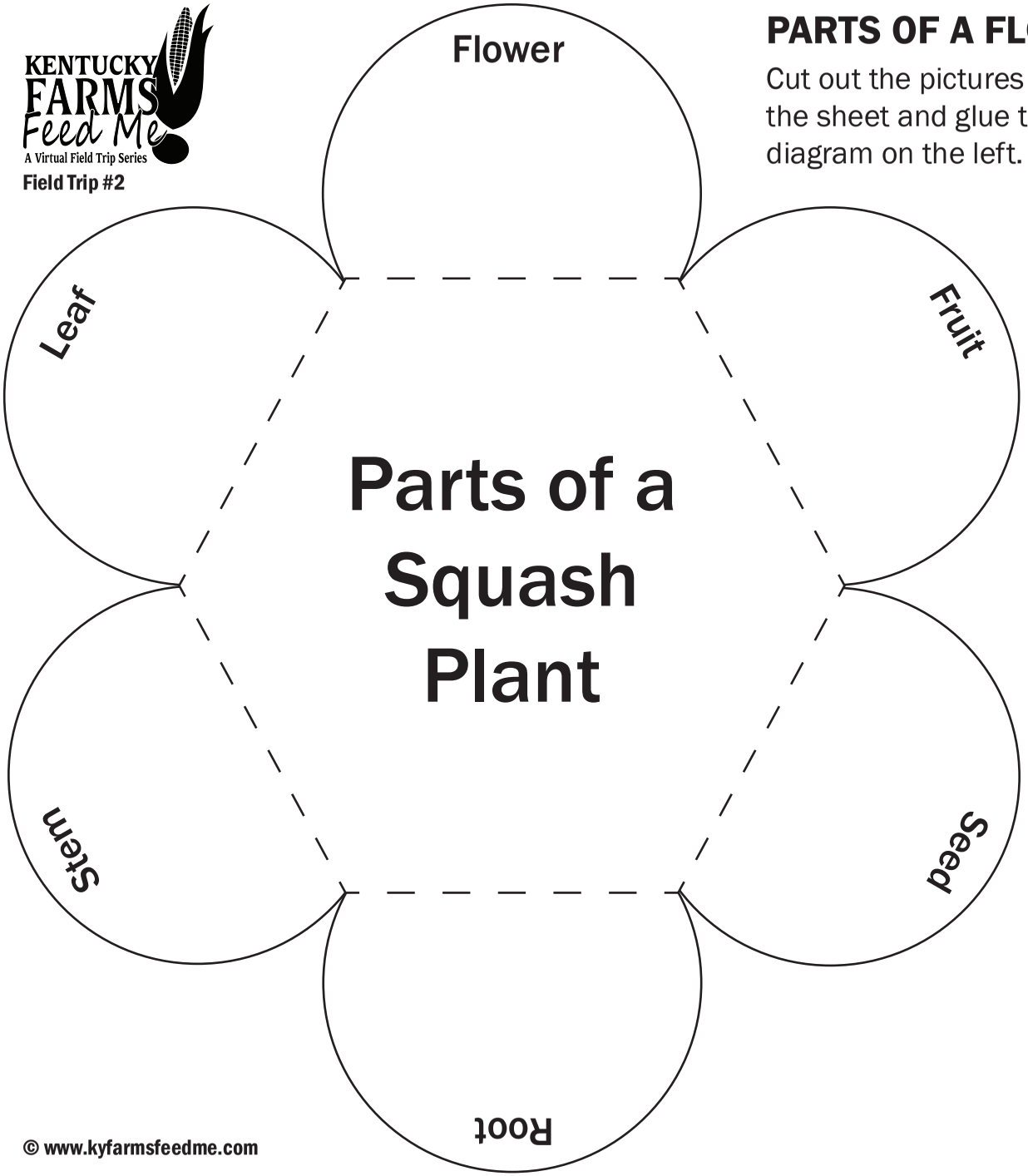
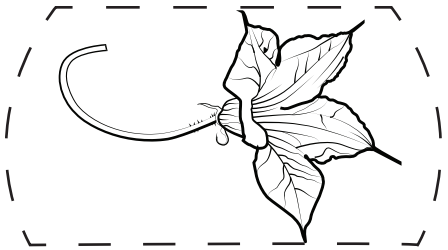
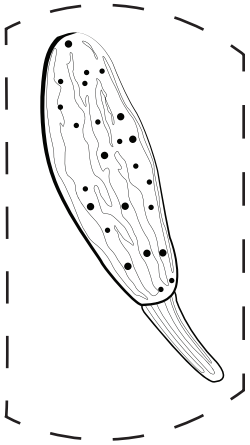
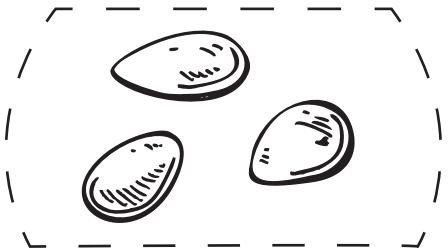
PARTS OF A FLOWERING PLANT ACTIVITY SHEET

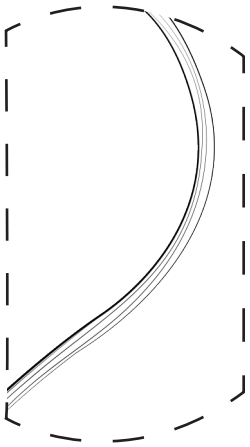
Cut out the pictures of squash plant parts on the right side of the sheet and glue them on the correct petal of the plant part diagram on the left. You may also cut out the diagram.

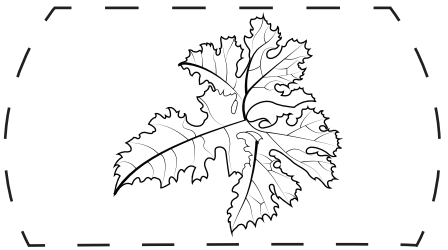












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Field Trip #2 - Primary

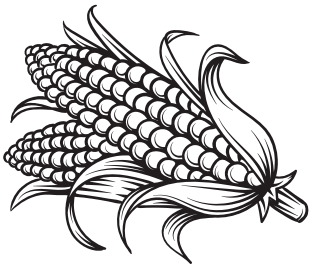
PLANT PARTS WE EAT

COLOR leaves GREEN.
COLOR stems ORANGE.
COLOR seeds YELLOW.

COLOR fruits RED.
COLOR roots BLUE.
COLOR flowers PURPLE.

pumpkin

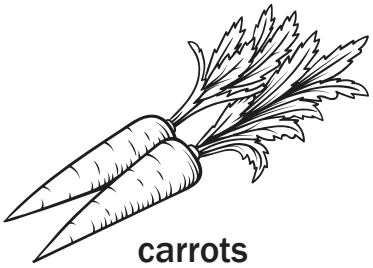
cauliflower



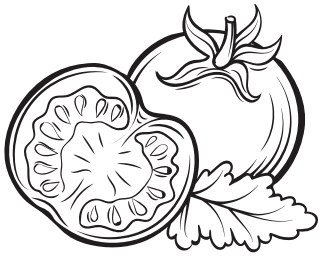
corn

celery

cucumber



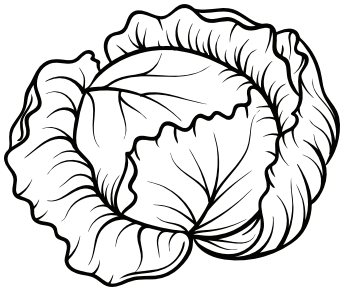
carrots



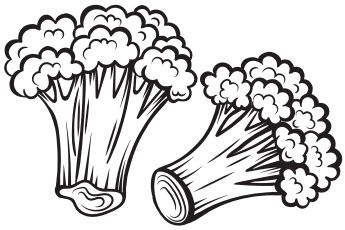
tomatoes

asparagus

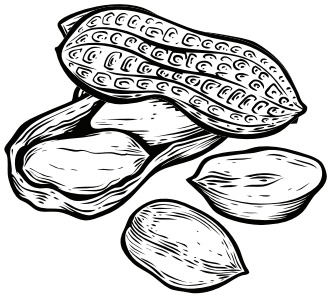
peas



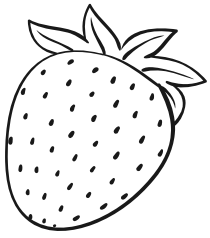
cabbage



broccoli



peanuts



strawberry

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Field Trip 2 - Intermediate +

Harvest Time

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