



## LESSON:

Fiber in our Food

## GRADE LEVEL: K-6

## OBJECTIVES:

- Identify and categorize *Brassica* plants
- Practice correctly planting or harvesting kale
- Learn about the nutritional benefits of fiber
- Prepare and taste a healthy, fiber-rich snack of kale chips

## KEYWORDS:

**Dietary Fiber-** A component of grains and vegetables that helps us better digest food.

**Vitamins-** Substances in food that our bodies use for maintaining our health.

**Harvest-** Taking the edible part of plant, while sometimes leaving the rest to continue growing.

**Brassicas-** A family of 'cold crop' vegetables that includes kale, collards, broccoli, and cabbage.

**Digestion-** The process of breaking down food into substances that our body can use.

## SKILLS:

- Identifying parts of plants
- Making comparisons
- Harvesting properly
- Safely handling food

## OVERVIEW:

Kale, collards, and broccoli all belong to a genus of plants in the mustard family named '*Brassicaceae*'. Although these vegetables are related, they each have their own distinct appearance. There are many ways we eat *Brassica* plants. Collard greens have light to deep green leathery leaves that are flat and round rather than curly. Broccoli and cauliflower are actually eaten as the immature flowering head of the plant! Brussel 'sprouts' are tightly-packed leaves attached to the stem. All of these vegetables grow very similarly and produce more leaves or sprouts as they are **harvested**.

Kale, collards, and broccoli can be planted anytime from early spring to the middle of summer. These plants are able to tolerate colder weather much better than fruiting crops such as tomatoes, peppers, or melons. The leaves of these plants are edible and delicious. **Harvesting** kale and collard greens is easy! Begin harvesting the leaves when the plants are about a foot tall. Starting with the larger leaves near the bottom, snap them off close to the stem. This will allow the smaller leaves near the top to grow larger for later use. Be sure to make a clean break when tearing off the leaves so that the plant can grow more leaves in its place and you can continue to harvest delicious leaves for a longer period of time. Broccoli should be harvested when the flowering head is full, but before the yellow flowers begin to open. Side shoots will continue to grow after the main head is harvested.

All of these vegetables provide a variety of vitamins and nutrients, but are an especially good source of **dietary fiber**. **Dietary fibers** are the parts of whole grains and certain fruits and vegetable that we eat but cannot break down and **digest**. Instead, the fiber moves through the digestive system, absorbing water, slowing down the intake of the food, and making us feel full. A diet high in fiber makes you less likely to develop heart disease, diabetes and other health problems.

## QUESTIONS TO CONSIDER:

- What do we have in common with members of our family? What makes us different? What can we control? What is out of our control?
- What do some plants have in common with each other? What makes certain plants different from other plants?
- Why are some foods good for our health? What makes food unhealthy?
- How do our bodies use the healthy parts of the foods we eat?



## MATERIALS:

### PART 1:

- Kale leaves
- Collard leaves
- Brussels sprouts
- Cabbage
- Broccoli plant
- Melon
- Tomato
- Eggplant
- Carrots

### PART 2:

- Kale, collard greens, broccoli, and/or cabbage plants
- Scissors (optional)
- Bowl (optional)

### PART 3:

- Vegetable nutrition fact cards for kale, collards, broccoli and other *Brassic*s
- Copies of kale chip recipe
- 15 bunches of kale
- 4 baking sheets
- Olive oil
- Salt
- Nutritional yeast, pepper, thyme, paprika or other seasonings
- Apple cider vinegar
- Pre-made kale chips
- Oven and oven mitts
- Spatula
- Salad spinner

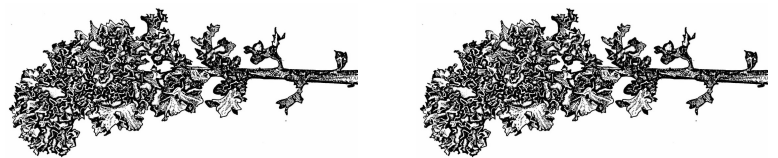
## PART I: COMPARING AND CONTRASTING BRASSICA PLANTS

### PROCEDURE (K-2):

1. Explain to students that plants have families too, and just like in your own family they share similarities and differences. Ask the students what they have in common with their brothers, sisters, and parents. What makes them different?
2. Explain that plants like kale, collards, and broccoli all come from the same family and that we are going to explore their differences and similarities.
3. Have the students pass around the leaves of two different types of kale. Ask students how they are different and how they are the similar.
4. Repeat this activity with other leaves in the '*brassica*' family (options include kale, collards, broccoli, brussels sprouts, and cabbage). How can we tell that these plants come from the same family? Do they have similar textures or smells?

### PROCEDURE (3-6):

1. Explain to the students that plants have families, just like humans do. Ask the students to list some things that they have in common with their families. What are some of the characteristics that they share with their close family? Explain that plants like kale, collards, and broccoli all come from the '*brassica*' family and that we are going to explore their differences and similarities. Have the students say '*brassica*' together.
2. Have the students pass around the leaves of two different types of kale. Ask students how they are different and how they are the similar. Repeat this activity with other leaves in the *brassica* family (options include kale, collards, broccoli, brussels sprouts, and cabbage). How can we tell that these plants come from the same family? Do they have similar textures or smells?
3. Then pass around leaves or fruits from four additional plants such as melons, tomatoes, eggplants, and carrots and ask students if they think each plant does or does not belongs in the *brassica* family.
4. Have the students list 3-4 characteristics of *brassica* vegetables.



## PART II : HARVEST TIME!

### PROCEDURE (ALL):

1. If you planted *brassic*s in the spring, ask students what they remember about planting. How have the plants changed? What parts are larger?
2. Explain when we can plant *brassic*s and how long they take to grow.
3. Ask the students what it means to **harvest** from a plant. How do we know when a plant is ready?
4. Demonstrate how to properly harvest from the *brassic*s in your garden. Each student should harvest at least one leaf or sprout from available plants.
5. Ask students how long they think our *brassic*a plants are going to keep growing. Explain that our kale, collards, and other greens are cold crops and actually grow and taste better in colder weather.
6. Ask students when they think our plants will be done producing food. Why do they think this will happen? Explain that when the temperatures go below freezing for a long enough period of time these plants will die.



## PART III: HIGH FIVE FOR FIBER! MAKING GREEN MONSTER KALE CHIPS

### PROCEDURE (ALL)

1. Ask the students how our bodies take the good parts out of the food we eat. Explain that after we eat, we digest food in our stomachs and intestines to get everything we need to live and grow. Vitamins are substances in food that our bodies use for maintaining our health. Have the students try to rub their bellies and pat their heads at the same time. Luckily, digestion is easier than this- we do it without thinking!
2. Explain that *brassic* plants have a lot of dietary fiber. Fiber helps us digest our foods and so we can use all of the healthy parts for our bodies. Have the students turn to their neighbors and yell “high five for fiber!”
3. Ask the students if they have ever eaten kale or collards at home. If so, have them share the different ways their families prepare these foods.
4. Discuss a few different ways that we can prepare these delicious vegetables.
5. Ask the students if they have ever eaten potato chips and then ask if they have tried kale chips, also known as green monster chips.
6. Explain the steps of the kale chip recipe before having the students assist in preparation.
7. Have one group of students de-stem the leaves and help spin the leaves dry in the salad spinner while another group assists in shredding kale into smaller pieces with their hands.
8. Put shredded kale pieces into a large bowl and with olive oil and spices. When they are evenly coated, spread them out in a single layer on baking sheets. Alternately, place the torn pieces in a ziplock bag and have students massage kale until it becomes tender.
9. Pass out samples of pre-made kale chips while the current batch is cooking and pass out the kale chip recipe for students to take home.

### RECIPE: KALE CHIPS

- 1 Tbsp Apple cider vinegar
- ½ Tbsp salt + other seasonings such as nutritional yeast, pepper and paprika
- Tbsp olive oil
- 2 bunches kale, rinsed with stems removed (optional)

#### Preparation:

1. Cut or tear kale into 2 to 3 inch pieces.
2. Mix vinegar, oil, and salt in a large bowl then add kale and mix by hand. Try to cover all the leaves.
3. Place on baking sheets and bake at 350°F until they are crispy.
4. After about 20 minutes, if it looks like they are not sizzling or getting a little crispy, turn up the heat to 400°F. Time for baking varies depending on the size of your chips and desired crispness. Pay attention so they don't burn!
5. Serve and enjoy!



Keep Growing Detroit exists to promote a food sovereign city where the majority of fruits and vegetables that Detroiters consume are grown by residents within the city limits. For more information please call 313-757-2635, email [keepgrowingdetroit@gmail.com](mailto:keepgrowingdetroit@gmail.com) or visit [keepgrowingdetroit.org](http://keepgrowingdetroit.org)