

Materials

- **Prep:** 1 large table, 2 plastic buckets, water, harvesting knife, hand sanitizer, peeler
- **Coleslaw ingredients:** 1 head cabbage, 2 large carrots, $\frac{3}{4}$ cup mayo, 2 T sour cream, 2 T sugar, 2 T white vinegar, 1 T dry mustard, 2 tsp celery salt, salt and pepper to taste
- **Kitchen supplies:** knife, cutting board, 1 large bowl, 1 medium bowl, peeler, grater, mixing spoon, measuring cups/spoons, whisk, small bowls, utensils, napkins
- **For carrots:** medium pile of straw mulch, 2 plastic buckets, 2 garden rakes, garden gloves

Preparation

- Fill 1 plastic bucket with water and place it by the prep table, set the other bucket aside for kitchen scraps
- Arrange coleslaw ingredients around the prep table to create an organized work flow
- Place spading fork, garden rakes, buckets, and garden gloves by the carrot bed

PROCEDURE

Step 1: Harvest and Cover Carrots

- “Today we are going to harvest cabbage and carrots to use as ingredients in our garden coleslaw.”
- Lead the group to the carrot bed. Scan the bed and select 2 large, healthy carrots to harvest.
- Insert a spading fork into the soil approx 6” from carrots. Demonstrate how to gently wiggle the spading fork back and forth to loosen the soil. Remove 2 large carrots from the soil and set aside.
- Distribute garden gloves and spread students out around the garden bed.
- Select 2 students to fill plastic buckets full of straw mulch and transport them to the garden bed
- Have the rest of the group “tuck the carrots in for the winter” by evenly spreading mulch at their base.

Step 2: Harvest Cabbage and Clean Carrots

- Lead students to the cabbage bed. Use a harvesting knife to cut off a head of cabbage at its base.
- Remove tough outer leaves and compost them. Lead students back to the outdoor classroom.
- Have 2 student volunteers clean carrots in a bucket of water.

Step 3: Make Coleslaw

- Demonstrate how to peel and grate carrots. Select 2 student volunteers to peel/grate into a medium bowl.
- Demonstrate how to finely shred cabbage using a knife. Shred entire cabbage and place in a large bowl.
- Have a student volunteer combine carrots and cabbage in the large bowl using a mixing spoon.
- Select a group of students to measure the remaining ingredients into the medium bowl. Whisk well.
- Add the ingredients to the cabbage mixture. Mix well to combine and taste for seasoning. Adjust if needed.

Step 4: Enjoy the Finished Product!

- Arrange small serving bowls on the prep table. Distribute modest-sized coleslaw samples into each bowl.
- Select 2 student volunteers to distribute coleslaw bowls and utensils. Enjoy your garden coleslaw!
- Dump out the carrot cleaning water. Use the plastic bucket as a trash bin for bowls and utensils.

Making Coleslaw: Cold Temperatures

Patterns & Preparation

ENGAGE

Select a student to take a reading from the max/min thermometer and have students record the data in the garden journals. Have we experienced our first frost yet?

Discuss changes in seasonal weather patterns. How has the garden changed since the beginning of the school year? What crops have been removed? What crops continue to grow? What does this tell you about plant temperature preferences?

OBJECTIVES

- Students will understand how the sugar content of plants changes in response to cooler temperatures
- Students will be able to identify 2 cool-season crops: cabbage and carrots

EXPLAIN

How does the sugar content of plants change in response to temperature change?

Many cool-season plants respond to cold weather conditions with sugar. Cabbage reacts to cold weather by *producing* sugars. Carrots, on the other hand, respond to cold weather by *converting* existing starches into sugars. In both cases, the extra sugar lowers the temperature at which the water in the plant freezes. As we know, pure, distilled water freezes at 32° F. Sugar water, though, doesn't freeze at 32°. The temperature has to drop a bit lower (how low depends on how much sugar is in the water) for the water to freeze. The plants take advantage of this little piece of science in order to survive dipping winter temperatures. We take advantage of their adaptation to the environment by waiting for the cool temps to bring us sweet garden treats.

When is the best time of day to harvest cool-season crops? Why?

The early morning is the best time to harvest cabbage, carrots, and other cool-season crops. The cooler temperatures allow plants to conserve a greater amount of water. The increased water content keeps plants crisp and fresh. Leafy greens such as cabbage taste best under these conditions. Plants will slowly lose moisture over the course of the day, resulting in wilted leaves with little "crunch" to them. Cabbage and carrots that are harvested in the early morning have the highest content of sugar and water, making them ideal ingredients.

ADDITIONAL CONTENT INTEGRATION *(see previous page)*

Introduce new garden terms: *overwinter* and *mulch*. Have students record new terms and definitions in their garden journals.

ADDITIONAL MATERIALS

- Max/min thermometer

EVALUATE

Journal prompt: Why do we harvest the cool season crops and why?