



HARDY GREENS

What is It?

- Hardy greens are leafy green vegetables that can grow in cold conditions.
- Many hardy greens are even tastier when it gets cold because the plants make extra sugars to protect their leaves from freezing.
- Hardy greens have calcium and vitamin K, which are important nutrients needed for healthy bones.
- There are many different types and varieties of hardy greens, with over 50 varieties of kale, and over 400 varieties of cabbage!
- Lacinato kale is also called dinosaur or dino kale for its bumpy leaves that look like dinosaur skin.
- Cabbage, collards, and kale are all in the brassicaceae family with broccoli and cauliflower. Chard is in the amaranthaceae family with spinach and beets.



Grow It

Baby chard, collards, and kale are great choices for a school garden because they can be planted and harvested in the spring or fall. Cabbage may also be a good choice but requires more careful planning, as it takes 50 to 100 days to mature and is typically harvested during the summer months.

Plant seeds directly in the garden or container five weeks before the last frost to two weeks after the last frost. For fall plantings, plant six to eight weeks before forecasted first frost. Most varieties will do well in containers at least eight inches wide and eight inches deep.

Kale, chard, and collards can be picked and eaten at any stage of growth. Remove the outer leaves while they are small (no more than eight inches long) and tender, and leave the rest of the plant to grow new leaves. Clip leaves at the base, close to the stalk. For best flavor, harvest early in the morning or after a frost—cold makes the plants sweeter.

Cabbage heads should be harvested whole when they are firm. They are ready when the outer leaf begins to fold back and they are the expected size for the variety.



Curly green kale, credit: WSDA



Observe, Draw, and Discuss Kale

Learn It

Materials

- Kale, and other hardy green leaves if possible, like chard or collard greens, for observation
- Magnifying glasses
- Paper or journals
- Colored pencils
- Optional: images showing the common patterns in trees, veins, lungs, roots, rivers

Directions

1. Write the focus question on the board: "What's in a leaf?"
2. Pass out a kale leaf to each student or pair of students, and ask them to look carefully at their leaves. Ask students to draw what they see. Direct them to label their drawing with the names of any plant parts they know.
3. After students have had time to observe, draw independently, and label plant parts, bring them together to add more labels to their drawing/diagram.
4. Model a drawing on the board or display a diagram of the leaves as you talk about the different plant parts, discuss their functions, and name them. Use the below discussion prompts: "What's in a leaf that we can see?" and "what's in a leaf that we can't see?"

Prompt one: What's in a leaf that we can see?

Select the following grade-appropriate information to discuss with students.

- Kindergarten: Draw pictures of leaves, or trace leaves.
- Grades 1st–2nd: Draw and label these parts of the leaf: Blade, Stem, Veins
- Grades 3rd–4th: Draw and label these parts of the leaf: Blade/Lamina, Stem, Petiole, Veins, Epidermis

Parts of the Leaf We Can See

- **BLADE:** The main part of the leaf; all of it except the stem, veins and petiole. The blade of the leaf takes in sunlight and turns it into food. It is also where the plant "breathes."
- **LAMINA:** Scientific word for blade of a leaf.
- **STEM:** The stem supports the leaf (like our skeleton supports us). It also transports (or moves) water, minerals, and food energy, like our veins.
- **PETIOLE:** The stalk of the leaf, which attaches to the stem of the plant. Its job is to hold the leaf to the rest of the plant.
- **VEINS:** Also known as the vascular bundle. Its join job is to transport (move) water, minerals, and food energy through the leaf and on to the rest of the plant. The veins in a leaf do the same things that the veins in our bodies do!
- **EPIDERMIS:** The outer protective layer of a leaf. Epidermis is a fancy word for skin. We have an epidermis too—our skin! Sometimes the leaf may be waxy because the epidermis secretes a waxy protective cuticle. This waxy covering protects the leaf and, in the case of kale, is a reason it is cold hardy.





Observe, Draw, and Discuss Kale

Learn It

Directions

Prompt 2 “What’s in a leaf that we can’t see?”

Select the following age-appropriate topics to discuss with students.

- Kindergarten: Nutrients, Vitamins
- Grades 1st–2nd: Nutrients, Vitamins, Minerals, Photosynthesis
- Grades 3rd–4th: Nutrients, Vitamins, Minerals, Photosynthesis, Chlorophyll

Parts of the Leaf We Can’t See

- **NUTRIENTS:** The parts of food that give us energy. Leaves can be considered the food factories for a plant. Things inside the leaf that we can’t see convert energy from the sun into energy, or nutrients, that plants can use, and that we can use when we eat plants!
- **VITAMINS:** The vitamins found in green leafy vegetables support our skin, help our immune system block sickness, and help our body and brain in other ways. Vitamins found in leafy greens are vitamins A, B, C, E, and K.
- **MINERALS:** The minerals found in leafy greens help our bones, heart, and nervous system. They also keep us from getting sick. Minerals found in leafy greens are calcium, sulphur, magnesium.
- **PHOTOSYNTHESIS:** The process that occurs in leaves to convert light energy to food for the plant. Carbon dioxide and water are used in photosynthesis, and oxygen is released. We cannot see that photosynthesis happening. Without it, we wouldn’t get any energy from eating plants and no oxygen would be released!
- **CHLOROPHYLL:** Leaves are the part of the plant richest in chlorophyll, which makes them green. So, we actually can see chlorophyll. Chlorophyll is used in the process of photosynthesis.

Closing

Close this activity by having students write on their diagram, or in a journal/science notebook, about what is in a leaf. Ask, “What are the things in a leaf that we can see, and what are the things we cannot see?” On their journal page, students may write letters of the vitamins (for grades K–1st), key vocabulary words (grades 1st–2nd), or full sentences (grades 3rd–4th) when answering this question.





Kale Salad

Make It

Be sure to follow local Food Safety rules and regulations. Learn more here: [Food Safety Rules and Regulations](#) | [Washington State Department of Health](#).

Recipe: Kale Salad Yield: Varies	
Ingredients	Directions
<ul style="list-style-type: none"> • One kale leaf per participating child • 2 lemons • 1/2 cup extra virgin olive oil • Kosher salt • 2 tablespoon honey • 2 tablespoon apple cider vinegar • 1 apple • 1/4 cup toasted pepitas (pumpkin seeds) or toasted sunflower seeds 	<ol style="list-style-type: none"> 1. Give each participant their own small plate and kale leaf. Ask them to tear the leaves from the stem tear the leaves into small pieces, and roll the kale in their hands before placing it in a small bowl. As they “massage” their kale, have them note the waxy texture of the leaves and note that they are breaking down the epidermis, the waxy protective outer layer. 2. While children are massaging their greens, you may invite kids to help prepare the salad dressing, or you may save time and make it yourself, showing the class what is in it as they massage their greens. 3. To make the dressing, mix in medium bowl the juice of two lemons (this can be four jobs to squeeze each half), olive oil, honey, apple cider vinegar, and a pinch of salt. 4. When children have massaged their leaves thoroughly, give each child a serving of dressing, apple slices, and a small scoop of seeds.

Recipe adapted from [eatFresh](#).

Explore interactive taste test resources to encourage participants to try what you made!

[Taste-Testing Event Resources](#)

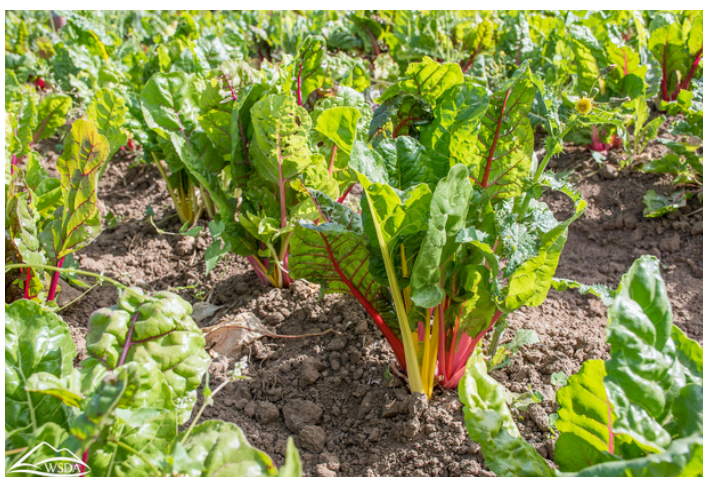


Eat It

- Hardy greens are extremely nutrient dense, which means they have a large amount of nutrients per serving. They are a good source of calcium and vitamin K, which support healthy bones. And they have dietary fiber, which helps you digest food and feel full.

Play It

- Chef Chlorophyll: Students learn how plants use photosynthesis to make food from carbon dioxide, sunlight, and water through this playful skit.



Rainbow Swiss Chard, credit: WSDA

Read It

- Cabbage and Kings, by Elizabeth Seabrook
- Katie's Cabbage, by Katie Stagliano
- Cabbage Moon, by Tim Chadwick
- The Cabbage Soup Solution, by Erika Olle
- Alex McGreen and the Tale of the Mysterious Kale, by Rayna R Andrews
- Vegetables, by Sara Anderson
- Captain Kale and the Superfoods, by Amy Roth
- Around Our Way on Neighbors' Day, by Tameka Fryer Brown

More About It

- Lessons for preschool by Wisconsin Harvest of the Month
- Kale activity for preschool by Wisconsin Harvest of the Month: [Wisconsin Harvest of the Month Early Childhood Activity Guide Kale](#)
- [Harvest of the Month Activity Guide Greens](#)
- Lesson for preschool by Harvest for Healthy Kids: [HfHK Cabbage Activity Plan.pdf](#)
- Activity for K-3rd grade from Montana Harvest of the Month: [Microsoft Word - HOM21 AfterschoolActivity Kale.docx](#)