

UNIT 1: INTRODUCTION TO THE GARDEN!

Unit 1 serves as the introductory unit for classes who've never had garden class. This is the fundamental unit of our Garden Ranger Program. This unit introduces the students to the garden, the garden rules, and some basics of gardening including parts of a plant, soil particles, and growing seasons.

Lessons can be 30 to 50 minutes long.

WEEK 1

Welcome to the Garden

Students learn the garden rules, explore the garden, and get their first yummy taste of the garden!



WEEK 2

All About Soil

Students learn about the importance of soil by learning about 3 particles found in soil: sand, silt, and clay



WEEK 3

Parts of a Plant

Students learn about the roots, stems, leaves, flowers, fruit, and seeds of plants.



WEEK 4

Friends and Foes

Students learn about the friends and foes ("good" vs. "bad" bugs) that we find in the garden.



WEEK 5

Climate and Seasons

Students learn how the climate and seasons affect the growing seasons here in Southern California.

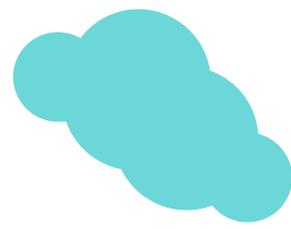


WEEK 6

Harvest Party!

Students end their first rotation in the garden by having a delicious snack based on what's growing in the garden!





Week 1. Welcome to the Garden

Grade: 1st-5th Grade

Unit: Intro Unit

Materials Needed:

- Whiteboard or Chalkboard
- Markers or Chalk
- Minimal food supplies to accompany what is growing in the garden

Lesson Objectives:

- Students will be introduced to the garden space.
- Students will know the rules while in the garden.
- Students will do a guided tour or walkthrough of the existing garden.

Introduction:

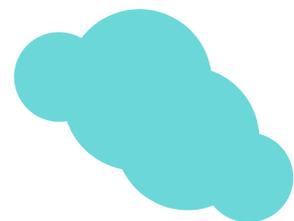
Introduce yourself to the class with a positive and friendly attitude. Explain that students will visit the garden for 6 weeks, and during each visit they will learn something new about the garden, participate in an activity, and taste something that grows in the garden. Tell them it's important that everyone behaves and stays safe so they can get the most out of their time in the garden.

Talk to the students about their past experience in the garden. What have they learned? What do they want to learn? Ask them if they can think of any **rules** we should follow while in the garden. When they have some ideas, ask them to share with their classmates. Write them down on the chalkboard as they go through them.

Examples of Garden Rules

1. Respect ALL living things.
 - a. This includes all plants and animals in the garden.
 - b. We do not step on or pick the plants.
 - c. We do not harm any insects or animals.
 - d. This also includes classmates and teachers.
2. Eat or harvest only if an adult says it's okay
3. Two finger touch when touching plants.
4. Walking Feet, Calm Sounds





Week 1. Welcome to the Garden

Grade: 1st-5th Grade

Unit: Intro Unit

Activity:

After going through all the rules, let the students know they will be practicing these new skills by exploring the garden.

- **K-3rd Grade:** Take them on a guided tour. Visit each bed and point out interesting plants. Show them the irrigation system. Show them the composting system.
- **4th-5th graders** will be able to roam by themselves. Have them write down observations or questions as they travel around the garden.

Encourage students to ask questions about what they see, hear, smell, and feel in the garden. Use positive reinforcement for students following and practicing the garden rules.

Tasting

Depending on what is growing in the garden, prepare a quick snack for students to try.

- **4th-5th Grade:** Students can help with minimal food prep.

It can be as simple as a freshly picked tomato with a touch of salt and a squeeze of lemon. Doing a snack during the first lesson is helpful in engaging students and getting them excited for the remainder of their garden rotation!

Conclusion

Ask students to share some of the things that they learned during the lesson. Review the rules discussed in the garden. Remind them that they will visit the garden for the next five weeks, and during each visit they will learn something new about the garden, participate in an activity and taste something that grows in the garden.

Optional: Name Game Activity

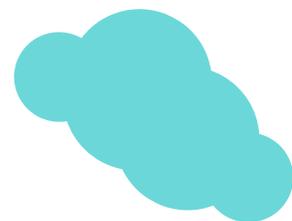
This name game activity is optional if you have extra time or a small class. The game will help them learn each other's names and think about the different things they might find in the garden.

Instructions for Name Game:

Have students say their name and then say something that they might find in the garden that starts with the same letter as their name. Note: You can also use the same sound, if the same letter isn't feasible. To help students feel more comfortable, share with them these examples and then ask someone if they'd like to start.

Examples: Liz Ladybug, Josue Jalapeño, Melissa Mint, Peter Pill bug, Zach Zucchini, Cristina Chrysanthemum, Sara Sink, Rosa Rosemary





Week 2. All About Soil

Grade: 1st-5th Grade

Unit: Intro Unit

Materials Needed:

- Samples of sand, silt, clay, and loam.
- Markers or Chalk
- Optional: Glass jar(s) with soil and water, that show the 3 types of soil.
- Minimal food supplies to accompany what is growing in the garden

Lesson Objectives:

- Students will be able to explain why soil is important for life
- Students will be able to describe the difference between sand, silt, clay.
- Students will learn that loam is the best type of soil for growing plants.

Introduction:

Ask students to raise their hand if they know why **soil** is important. What grows in soil? Who needs it in order to live? Ask them what they had for dinner and trace it all back to soil. Soil is important because: (1) plants need it to grow, (2) insects live in or on it, (3) it helps filter our water and, (4) plants that grow in soil give us oxygen to breathe.

All soil is made from a mixture of sand, silt, clay and organic matter. Show or draw the different particles as you talk about them.

- **Sand** - the largest particle. When soil has too much sand, there's lots of space between each grain of sand. Sandy soil doesn't hold water well and doesn't stick together. Since the grains of sand are large, more air is in sandy soil than other types.
- **Silt** - finer than sand but still feels gritty. Silt is the particle that makes mud. Plants like silt but silt often blows away by wind or water.
- **Clay** - is very fine but makes soil heavy and dense. Since it is the smallest particle there's little room between each particle of clay. When it is dry it is very hard for plant roots to grow. Since there's little room between each particle, there's very little oxygen in clay soil. This makes it hard for bacteria and other organisms to live.
- **Loam** - the best soil combination made of sand, silt and clay. It has equal parts sand and silt with a little less clay. It allows water and air to move through it but can also retain, or hold on to water, air, and humus.

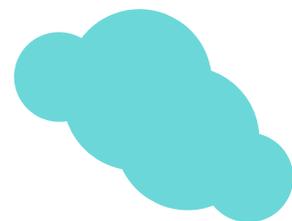
4th-5th: For higher grades you can also talk about **organic matter**, which are pieces of living things that fall into the soil. It can be dried out leaves from trees or plants, or dead insects. Once the matter decomposes it creates **humus**, which is super good for plants because it has nutrients and minerals.

Activity:

Students will work as partners to determine the soil type in their garden. With their partner, students will find a handful of soil in different beds of the garden. Encourage them to explore different parts of the garden. It will be more interesting if students have different soil types.

Once they have a handful of soil, be sure that each sample is moist but not wet. On the count of three have students gently squeeze their sample. Ask them to open their hand and share what happened. Talk about what that felt like as a group.





Week 2. All About Soil

Grade: 1st-5th Grade

Unit: Intro Unit

Activity (cont):

Have them choose from the following:

- (1) It held its shape, and when they poke it, it crumbles. This means they have loam!
- (2) It held its shape, and, when they poke it, it doesn't crumble. This means they have clay soil.
- (3) It held its shape, and, when they poke it, it doesn't crumble BUT it is a little rough to the touch. This means they have silty soil.
- (4) It crumbles when they open their hand. This means they have sandy soil.

Tasting

Depending on what is growing in the garden, prepare a taste for students to try. Do your best to have students try something different from what they tried the week prior. If possible, give them a taste of beans (which give the soil nitrogen) or something else that has an interesting relationship with soil.

Conclusion

Ask students to share the three types of soil, ranging from smallest to largest particle size. (Answer: Clay, Silt, Sand)
Ask a few students to share something that they learned today, and to point out something that interested them.

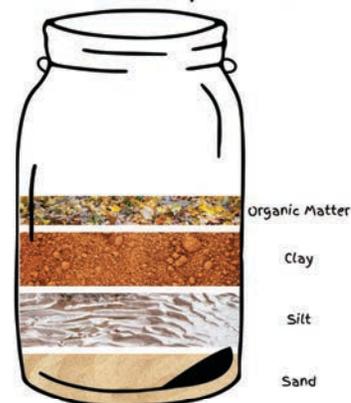
Optional: Soil Jar Activity

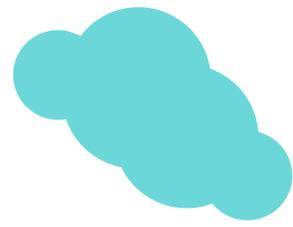
This activity is perfect for higher grades (4th-5th) or if you have a longer class. This activity can be done at the **beginning** of class to help the soil settle. Alternatively, it can be done at the end of class and jars left in a classroom. Students can analyze their results the following week.

Depending on the class size, break the class into smaller groups. Give each group a small glass jar (must be transparent and have a lid.) Have students find a soil sample from the garden - it should fill the jar no more than 50%. To the sample, add water and a small dash of dish soap. Have the students shake the closed jar. They should let it sit for at least 30 minutes. Results are better if the jar settles overnight.

Have students analyze the results. What particles float at the top of the mixture? What particles sink to the bottom? What do the different layers tell you about the soil in the garden? Have students compare their soil samples. Do different areas of the garden have different soil composition?

Soil Jar Experiment





Week 3. Parts of a Plant

Grade: 1st-5th Grade

Unit: Intro Unit

Materials Needed:

- Plants from the garden to illustrate the different parts of a plant.
- Materials for tasting

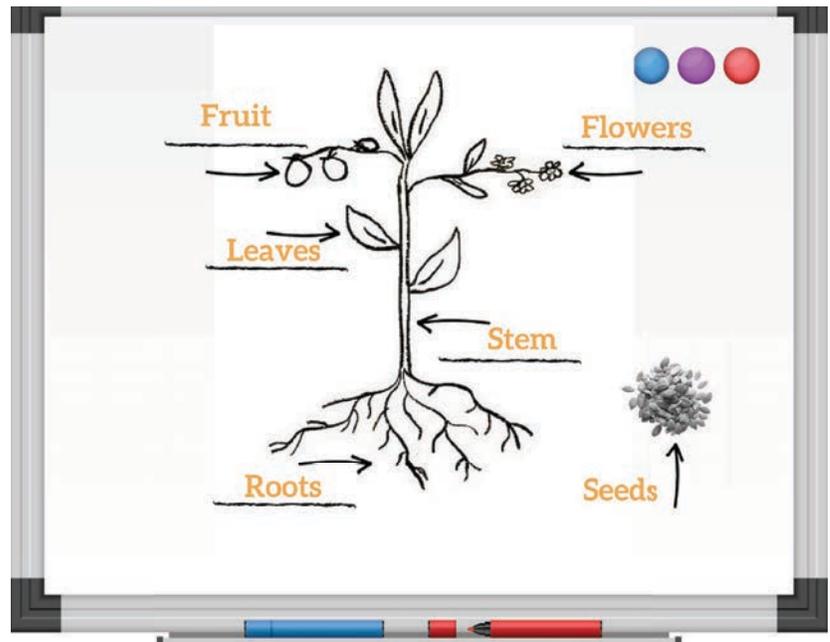
Lesson Objectives:

- Students will be able to identify the six basic parts of a plant.
- Students will be able to describe the importance of each part of a plant.
- Students will be able to articulate which part of the plant people consume.

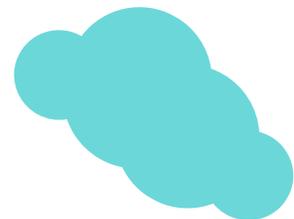
Introduction:

We eat fruits and vegetables that are roots, leaves, stems, seeds and flowers. Some parts of the plants are good for us but some parts are poisonous. It is important to learn which part of the plant we do eat. For example, tomatoes are the tasty fruit of the plant but their leaves will make us sick.

Bring a plant into class, or harvest one from the garden so students can see some of the parts described. You can also draw a diagram on your board. Explain to the students that the plants that we eat are similar to other living things: each part is important for its survival. As you mention each part, give examples of the parts that human eat (see next page).



- **Flower:** a shoot of a plant that is specialized for reproduction and bears modified leaves as petals
- **Fruit:** the ripened ovary of a plant, it's usually sweet and pulpy because the plant wants animals to eat it.
- **Leaf:** one of the green, usually flat parts that grow from a stem or twig of a plant and that function mainly by making food through **photosynthesis**.
 1. **K-2nd Grade:** Explain that photosynthesis is how plants make food by using the energy of the sun!
 2. **3rd-5th:** Explain more in detail how photosynthesis works. Plants use sunlight, carbon, and water to make oxygen and glucose (sugar!).
- **Root:** the organ of the plant that lies below the soil. Roots are used to uptake water and nutrients from the soil! This is a perfect time to review the soil particles mentioned in the last lesson.
- **Seed:** a fertilized ripened ovule of a flowering plant that contains an embryo and is capable of producing a new plant; also, a plant structure as a spore or small dry fruit capable of producing a new plant
- **Stem:** the main stalk of a plant that develops buds and shoots and usually grows above the ground



Week 3. Parts of a Plant

Grade: 1st-5th Grade

Unit: Intro Unit

Activity

Have students stand and use their bodies to demonstrate how a plant grows:

- First, ball up as small as you can to represent a seed. Seeds are silent, so no making noise.
- Second, stomp in the ground to root yourself down.
- Third, begin to stretch up and grow your stem.
- Fourth, stretch your arms out and grow leaves. You can do a grasping motion towards the sky that represents photosynthesis, or “soaking up the sun for energy”
- Fifth, grow a happy flower by putting your fingers next to your face and wiggling them to represent petals.
- Sixth and last, grow a fruit by placing your arms in a circle above your head. You can drop your fruit on the ground and it becomes a seed, beginning the cycle from the start.

For K-2nd Grade: You can continue with the above activity. Name a part of the plant and have students act out the part.

For 3-5th Grade: Have students partner up. Announce a part of a plant, and have students go into the garden with their partner to identify this part. As they identify a part, have them use adjectives to describe what they see, smell, feel, or hear: i.e. this plant stem is spiky, this flower smells sweet, this leaf looks very green etc.

Examples of edible plant parts:

- Stems: asparagus, celery, kohlrabi, leeks
- Flowers: cauliflower, broccoli, artichoke, nasturtiums
- Roots: radish, beet, carrot, parsnip, onion, garlic, turnip, sweet potatoes
- Seeds: peas or beans in pod, corn on the cob
- Fruit: eggplant, squash, tomatoes, cucumber, strawberry, pepper
- Leaves: lettuce, cabbage, spinach, mustard greens, beet green, kale, chard, mint, Brussels sprouts (they are a very tight bud of leaves)

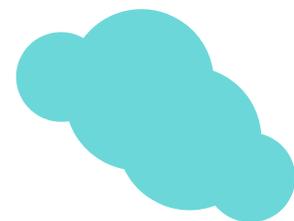
Tasting

Have students sample a snack of 2 plant parts: For example: a strawberry (fruit and seeds), an orange slice (fruit) and a mint leaf (leaf).

Conclusion

Ask the class if they can name all of the parts of the plant. Ask students to name one interesting thing they learned in the lesson. Then ask them who they can share this new knowledge with when they get home.





Week 4. Friends or Foes

Grade: 1st-5th Grade

Unit: Intro Unit

Materials Needed:

- Friends and Foes Picture Cards
- Supplies needed for tasting

Lesson Objectives:

- Students will be able to understand the interconnectedness of species in the garden.
- Students will be able to identify common bugs and insects in the garden.
- Students will be able to understand new vocabulary words in the context of the garden.

Introduction:

Explain to students that the garden is home to many **species**. There are many bugs, insects and critters, as well as plants in the garden. Some of these creepy crawling creatures are friends and some are foes of the plants in the garden. Using your picture cards, go over some of the friends and foes found in the garden.

- **Friends**, or helpers in the garden, are species that make the garden flourish. They can be pollinators and predators of the foes in the garden.
 - Bees, Ladybugs, Assassin Bug, Lacewing, Garden Spider, Worms
- **Foes**, or enemies, in the garden are species that make it difficult for the garden to flourish. They eat plants or harm the pollinators. Be sure to explain both are entitled to respect in the garden!
 - Aphids, Potato Beetle, Cucumber Beetle, Root Maggot, Green Cabbage Worm, Tomato Hornworm

Activity

Game: Friends and Foes Tag (or Ladybugs vs Aphids)

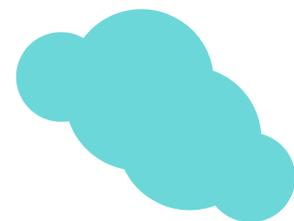
Find a space in or near the garden that is large enough for a game of tag. Separate students into 3 groups: friend, foe, or plant. Share with students that they will be learning more about the garden friends and foes through a game of freeze tag.

In the game, no one person is it and no one is eliminated from the game. In short, everyone can tag everyone else. When one student tags another, they both share their identity, which is either: friend, foe or plant.

- When a plant is tagged by a foe they must freeze and sit down.
- When a friend sees a plant frozen on the ground, they can tag them and bring them back to life.
- When friends and foes tag each other they resolve the tie with a game of rock, paper, scissors.
- If a friend is frozen, another friend can unfreeze them and when a foe is frozen, another foe can unfreeze them.
- When two students from the same group tag each other they give each other high-5s and continue.
- If time permits, play the game a few times so students have the chance to be in a different role.

For K-2nd grade: you can simplify the game to Ladybugs (Friends) versus Aphids (Foes).

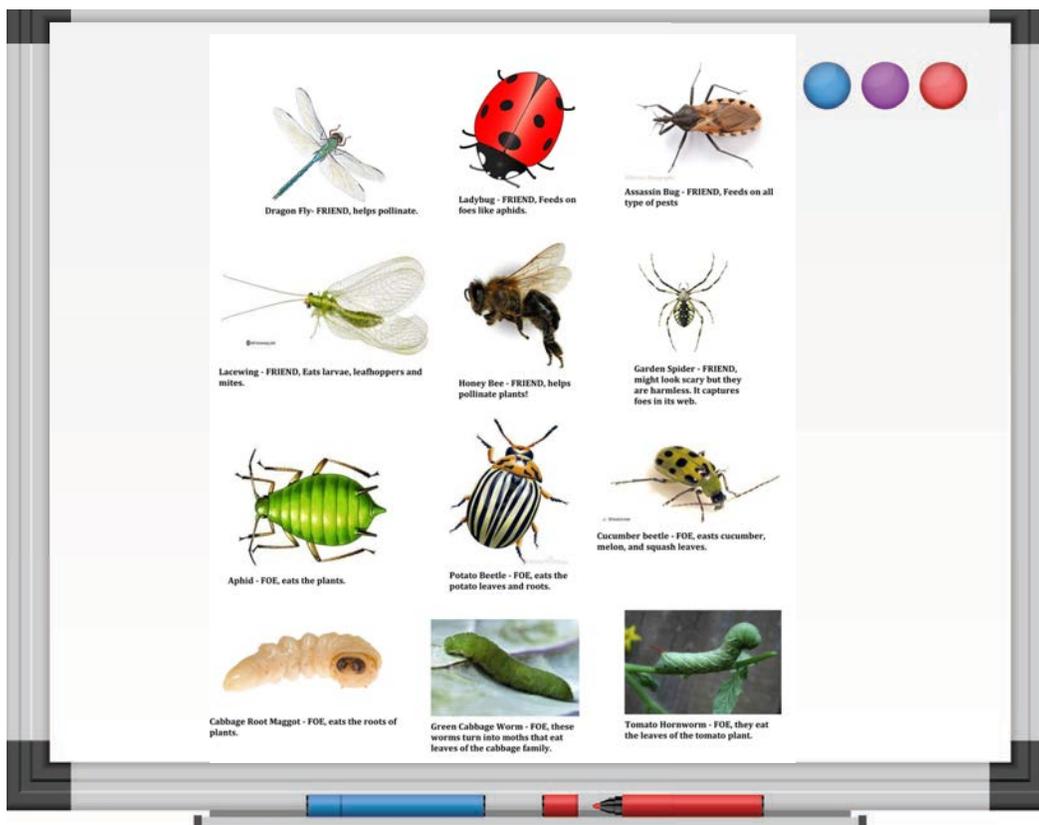




Week 4. Friends or Foes

Grade: 1st-5th Grade

Unit: Intro Unit



Tasting

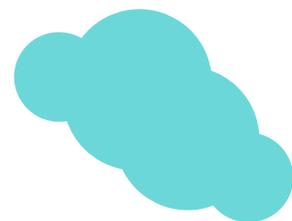
Depending on what is growing in the garden, prepare a taste for students to try. Do your best to have students try something different from what they tried the week prior. It can be a variation but "tastes" are intended to expose students to a different healthy food. It could even be one parsley leaf each.

Conclusion

Ask students what they observed in the game. What are some of our garden friends? What are some foes? Ask students to share what they think we should do when we come across a friend or a foe. If time permits, allow students to explore the garden to see if they can spot a friend or foe.

Bees: This is a perfect time to teach students how to behave around bees, which are super important **pollinators**. Remind students they should not scream or run when they see a bee. Instead they should calmly walk away. If a bee lands on them, they can gently blow of the bee and it will fly away.





Week 5. Climate and Seasons

Grade: 1st-5th Grade

Unit: Intro Unit

Materials Needed:

- Vegetable Picture Cards (can be found in accompanying materials)
- Supplies for tasting
- Seeds or seedlings for planting (optional)

Lesson Objectives:

- Students will be able to identify the Los Angeles climate.
- Students will be able to identify the two planting seasons: cool and warm.
- Students will be able to identify which plants are cold-weather and which are warm-weather crops.

Introduction:

Ask students two introductory questions: "What season are we in now?" "Did you know that we only experience two planting seasons?" We are lucky because in Los Angeles our seasons last a little longer than most.

We have two planting seasons: a cool season and warm season. Our planting seasons last several months because of our unique weather. We live in a **Mediterranean climate** - we have warm summers and mild-cool, wet winters - easy to grow food all year long.

4th - 5th Graders: Briefly ask them if they know the difference between **Climate and Weather**.

- **Climate** is the average weather conditions of a location, over a period of time.
- **Weather** is the conditions of the atmosphere, at a given point in time (i.e. daily, hourly etc).
- Have them think about the climate of other regions: i.e. the East Coast, Canada, the tropics of Brazil etc. How is the climate different? How does this affect the plants that grow in that region compared to where we are?

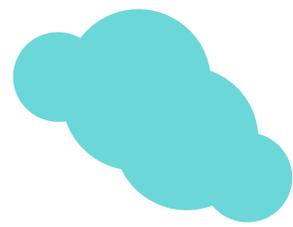
Activity

Explain to students some crops go **dormant**, or have minimal activity during some seasons. Some crops love certain weather and only grow in those months. You can also use the animal hibernation analogy (i.e. bears hibernate over winter). Review cold weather in Los Angeles and warm weather in Los Angeles.

- Cold tends to be: cloudy, cool, windy, rainy, under 80 degrees, frosty, shady, less than 6 hours of direct sunlight
- Warm tends to be: hot, warm, no clouds, above 80 degrees, clear skies, dry, sunny, bright, more than 6 hours of direct sunlight

Tell students that they are going to play a game. Explain to students that you'll assign the class a fruit or vegetable (you can write the vegetable/fruit name on a board). Then you will read aloud a weather condition. When a weather condition is read, they have to squat or put their head down if they think the fruit or vegetable should be **dormant**. If the plant should be **non-dormant (or thriving)**, students should put their arms up and cheer. Plants need certain weather conditions to grow (and to taste good)! For example, if lettuce is planted in warm weather it will bolt, or go to seed and its leaves will turn bitter before we can enjoy its refreshing taste. It has to be planted in the cool season.





Week 5. Climate and Seasons

Grade: 1st-5th Grade

Unit: Intro Unit

Activity

To help students, you can tell them that cool season plants are usually green and leafy. Warm season plants usually produce fruit. When students are ready, play the game. Here are some examples:

Weather Conditions

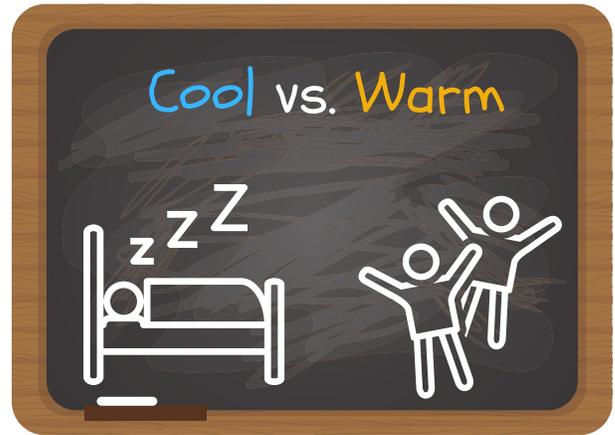
- Frosty (cool)
- Sunny day above 85 degrees (warm)
- Heavy Rain (cool)
- Less Than 6 hours of sunlight (cool)
- More than 8 hours of sunlight (warm)

Warm Season Plants

- Eggplants
- Cucumbers
- Bell Peppers
- Tomatoes
- Watermelon
- Pumpkins
- Cantaloupe
- Melons

Cool Season Plants

- Asparagus
- Kale
- Spinach
- Lettuce
- Broccoli
- Onions
- Radish
- Carrots



For K-2: You can simplify the activity by choosing a plant and asking students if they think it's a warm or cool weather plant. If students have a hard time deciding, you can just tell them one by one.

Tasting

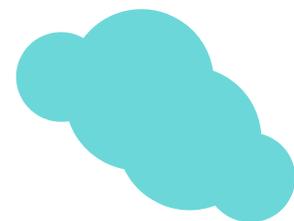
Have students **identify** something in the garden that is "in season," or seems to be doing well based on the current weather. For example, in the late-summer or fall students might notice juicy tomatoes. In the winter, they might notice that the chard is big and green. Once they've identified a plant, harvest the plant for students to taste.

Conclusion

Ask students to name the type of climate we have in Southern California. What are the growing seasons we have? Can they name one or two plants that grow in each growing season? Encourage them to think about the fruits and vegetables they eat at home, and whether they are "in season."

Planting (Optional): If time permits, have students plant a seed or seedling that is from a plant in season.





Week 6. Harvest Party

Grade: 1st-5th Grade

Unit: Intro Unit

Materials Needed:

Cooking Utensils

- 3 Scissors
- 1 Whisk
- 3 School Safe Knives
- 2-3 Crinkle cutters
- 6 Cutting boards
- Paper towels (from classroom)
- Large mixing bowl
- Small mixing bowl



Ingredients for Chard Tacos

(adjust quantities based on class size and what's available!)

- 30 leaves of chard
- 9 carrots
- 6 avocados
- 6 apples
- 6 beets or radishes
- 24 string/bush beans

Ingredients for dressing:

- 2 lemons
- 4 ½ Tablespoon Olive Oil
- Rice vinegar
- Salt and pepper to taste

Notes:

The goal of this lesson is to engage every student in the class with food prep. Remember that **safety** is a priority (only use school safe knives). How the students go about preparing the food is up to the Ranger to decide, based on the student's behavior, what ingredients are available, and how many utensils are available. The Ranger can make stations, and have students rotate through each station. Or the Ranger can have one station, in the front of the class, and have small groups come up, one at a time to help with food prep. Have another activity ready for students not involved in food prep. Preparation and planning is key for this lesson! Additionally, the snack for this lesson can be adjusted or changed as needed based on what's available. Get creative!

Lesson Objectives:

- Students will be able to identify the term harvest.
- Students will learn how to safely harvest from the garden.
- Students will be able to recognize when edible plants are ready to be harvested: ripe.
- Students will learn that unripe foods can be harmful to people.

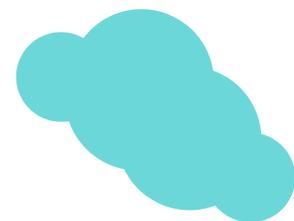
Introduction:

Ask students if they have ever tasted a fruit or vegetable that isn't **ripe**. Ask them to use **adjectives** to describe what their senses experienced. When eating it, what did it smell, taste, look, sound and feel like?

Explain to the class that when plants are unripe, they can be harmful. The reason why they taste "bad" is because the plant is telling us it shouldn't be eaten yet. When the plant is too bitter, unusually green or displaying something unattractive to our senses, it can be harmful to people. For example, when potatoes are harvested too soon, and they have a green spot it means that the alkaloids haven't dissolved.

Explain that today they are going to **harvest**, or pick a crop that is ready to eat. You can mention that in different **cultures**, people have harvest celebrations to welcome the abundance of food, such as Sukkoth for Jewish people, the Moon Festival in some East Asian countries, and Chuseok in South Korea. After we harvest, we will use the ingredients to make a delicious snack.





Week 6. Harvest Party

Grade: 1st-5th Grade

Unit: Intro Unit

Activity and Tasting

Demonstrate to students how to properly **harvest** fruits and vegetables in the garden. Remind students that they should only harvest and eat from the garden when they are given permission by an adult. Depending on what you will make with them, make sure students understand how much each person should harvest. (i.e. one leaf, two strawberries)

Example of Snack Preparation:

Ensure everyone has **clean hands** before beginning with food prep. Divide students into small groups of 5-6. Prepare the avocados prior to class by slicing them into thin, long pieces. Also, slice lemons in half.

- Group 1: Collect chard, rinse and tear each leaf into three pieces (and set aside on a bowl).
- Group 2: Collect, rinse and peel/cut carrots.
- Group 3: Rinse, core and slice apples into straws.
- Group 4: Collect, rinse and slice beets/radishes into straws.
- Group 5: Collect, rinse and (use scissors to) cut beans into $\frac{1}{4}$ " pieces.
- Group 6: Combine and whisk each ingredient to make dressing.

Have students in Groups 2-5 put ingredients in large bowl and have Group 6 pour dressing over ingredients. Mix well. Then have each student take one piece of chard, let students use tongs to fill theirs' with the ingredients from the bowl and take a slice of avocado to place on top. Ask students to wait until every student is served before they eat. If possible, sit at picnic tables too.

Optional: Ask one group to put a tablecloth on the table and to find flowers from the garden to decorate the table. You can use a recycled can as a vase.

Don't yuck my yum! This is a great time to remind students to be respectful of their classmates and their preferences. Just because one student might not like a certain taste, they should not make others feel bad or guilty for liking it. This is why it's best to have students eat at the same time, so students that eat later are not influenced by reactions of students that ate earlier. Remind students that if they do not like something, they are not forced to eat it. They can throw it away or share it with a friend.

Ask students to describe what they taste. Which flavors are strongest? What do they enjoy from the snack? What do they not like?

Conclusion

Explain that this is the last class of their garden unit but they are always welcome to visit the garden as long as they are supervised by an adult. Remind students that when in the garden, they should always practice the garden rules. Have students share and reflect on what they learned these past 6 weeks, and give specifics on their favorite part of garden class. Ask them what they might want to learn during future garden classes. This will help guide the Ranger when deciding what topics to cover during the next rotation!