Winter in the Garden

Overview

The winter season brings many changes, including cooler temperatures, shorter days, and in some areas a decrease in water availability and frozen soil too. In this lesson, young gardeners will explore how garden life adapts to these conditions.

Grade Level/Range: PreK - K

Objective(s)

Students will:

- Learn about seasonal changes during the winter.
- Use their observation skills to look for nature's adaptations in the winter garden.
- Explore ways they can help care for their garden and garden inhabitants during the winter.

Time: 1 hour

Materials

- A book about winter like *It's Winter*, by Linda Glaser
- Winter Scavenger Hunt Worksheet or another list of things to find applicable to your area
- Clipboards (pieces of cardboard and thick rubber bands are a great alternative)
- Writing instruments (markers, crayons, pens, or pencils)
- Large piece of paper

Background Information

Wintertime brings many changes to a garden, including a decrease in temperatures and shorter periods of sunlight. In northern regions, the colder air temperatures also can lead to frozen soil and water. Living creatures survive the winter by relying on special adaptations. Here are some examples:

Plants. Above ground, some plants are deciduous and lose their leaves during the fall, entering into a dormant state as an adaptation to survive the winter. Evergreen plants, in contrast, are covered in living foliage year-round. They protect themselves in cold weather with a waxy coating on their foliage that prevents water loss. They also concentrate substances in their leaves that act as antifreeze to prevent ice from forming inside the cells and damaging them.

Plants also have adapted strategies to tolerate the conditions below ground. Perennial plants, trees, and shrubs that grow where the ground freezes often have deep root systems that extend below the frost line. Some plants' roots release water from their cells into the surrounding soil; this concentrates sugars and salts within the roots' cells, lowering the temperature at which they'll freeze. It also minimizes damage caused by ice crystal formation when root cells do freeze. Learn more about winter adaptations of plants in Winter Survival.

Animals. Many reptiles and amphibians, including species of snakes, turtles, and salamanders, burrow deep into the soil (or crawl into abandoned animal burrows) to survive the winter. Some earthworms burrow down beneath the frost line for the winter; other types produce eggs in cases called cocoons and survive winter in that state, ready to hatch in spring. Various insect species go into a hibernation-like state called diapause and remain dormant over the winter. Mammals with fur grow a winter coat that is thicker and more protective than their summer coat. They may seek out or create shelters, such as dens, and then enter hibernation (or hibernation-like states) during which their metabolic, heart, and respiratory rates slow and their body temperatures drop. These changes reduce energy consumption and allow them to survive the winter without eating or drinking.

Soil-dwelling microbes. Many microscopic organisms, such as fungi and bacteria, remain active as long as the soil isn't frozen, continuing their work of breaking down organic matter and cycling nutrients. In some cases, their activity actually increases after a hard frost kills plants and the dead roots decompose.

Laying the Groundwork

Ask students to brainstorm ways the weather changes outside during the winter. Write or draw pictures illustrating their answers. Ask: What we do during the winter to protect ourselves from these changes? What about the plants and animals that live outside in our garden? What do you think they do during the winter?

Explain that living creatures have adaptations to help them survive the winter months. That means they have special traits and changes in behaviors that allow them to thrive in the cold.

Read a book about winter such as *It's Winter,* by Linda Glaser. Point out any adaptations mentioned. Examples include things like animals growing thicker fur, storing away food, and hibernating. For plants, it might mean losing their leaves or having special tough evergreen foliage to withstand harsh conditions.

Exploration

1. Brainstorm all the signs of winter in your area before your hunt. Create a list of common winter plants, animals, and elements in your think you might see in your garden or use the KidsGardening Winter Scavenger Hunt Worksheet.
2. Dress appropriately for the weather and then head outside to your chosen winter hunt location. Give each child a scavenger hunt sheet on a clipboard and a writing instrument, and then encourage them to look closely and carefully for all the items on the list.

   If working with children for whom clipboards are difficult to handle, consider making a large poster of your scavenger hunt items and marking off or tallying your finds as a group. Pre-scouting your green space for trash/hazardous materials and explaining beforehand that not finding everything on the list is okay are great ways to set up your scavenger hunt for success. Not finding all the items offers an opportunity to talk about how temperature determines if there is snow or ice in your area, how animals seek shelter and food during winter, and more!

Making Connections

Come back inside and talk about everything you saw while on your scavenger hunt. Spread out a large piece of paper from a butcher/bulletin board paper roll and encourage kids to recreate the winter garden landscape using crayons, markers, or paint.

Branching Out

Even though garden creatures have special ways to adapt to winter, gardeners can help care for them too, especially during extreme conditions. Check out some of the ideas you and your students may be able to provide a helping hand for garden life during the winter:

The Winter Bird-Friendly Schoolyard:
https://kidsgardening.org/resources/gardening-basics-the-winter-bird-friendly-schoolyard/

Creating Overwinter Habitat with an "Untidy" Garden: https://kidsgardening.org/resources/gardening-basics-create-overwintering-habitat-with-an-untidy-garden/

Connection to Standards

This lesson can be used to teach the following Next Generation Science Standards:

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time.

K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

Related Articles:

Winter Survival:
https://kidsgardening.org/resources/digging-deeper-winter-survival/

Soil in Winter: What's Happening Underfoot?
https://kidsgardening.org/resources/digging-deeper-soil-in-winter/

Exploring Buds in the Winter:
https://kidsgardening.org/resources/lesson-plan-exploring-buds-in-the-winter/

Art in the Winter Garden:

https://kidsgardening.org/resources/garden-activities-art-in-the-winter-garden/

Winter Bird Observation:
https://kidsgardening.org/resources/lesson-plans-winter-bird-observation/

Green Forever:
https://kidsgardening.org/resources/lesson-plans-green-forever/

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Winter Habitat Scavenger Hunt

Mark the box of each wintertime item that you find! Turn your hunt into winter bingo by seeing who can find every item in a column, row, or diagonal first.

 Evergreens	 Snow	 Squirrel	 Tracks
 Fallen Leaves	 Icicles	 Pinecones	 Birds
 Winter Berries	 Chimpmunk	 Mud/Puddles	 Bare Trees
 Rocks	 Snowman	 Clouds/ Rain	 Rabbit