

# GARDEN ECOSYSTEMS ARE AWESOME

## Objective

- Students will learn the difference between living (biotic) and non-living (abiotic) things.
- Students will understand what living things need to survive.
- Students will understand that all parts of the garden ecosystem are inter-related and work together to sustain life.
- Students will understand that within an ecosystem there may be many habitats.



## Background

Reference information for this lesson can be found at [kyreadyssetgrow.org](http://kyreadyssetgrow.org).

## Introduction

Ask students what they need to survive. Younger students will verbally answer, while older students can write down as many things as they can think of (food, shelter, warmth, water, oxygen, etc.) Discuss their findings, and the fact that all living things need the same things to survive (food, water, oxygen, shelter and a habitat).

Introduce the idea that all parts of an ecosystem are inter-related and work together to sustain life.

Ask students if they think a garden is an ecosystem.

Have them share out the parts of a garden ecosystem: sun, soil, rocks, air, water, plants, animals (insects, worms, spiders, rabbits), microorganisms and decomposers...AND the gardener, who manages the garden.

Ask, “What does the term **abiotic** mean?” Review examples of non-living components.

# READY SET GROW

## Author

Darleen Horton

## Grade Level

K-5

## STEAM Connections & Kentucky Academic Standards

### NGSS

- Life Science: Interdependent Relationships in Ecosystems  
K-LS1-1, K-ESS2-2, K-ESS3-1, K-ESS3-3, 2-LS4-1, 3-LS4-3, 3-LS4-4, 5-PS3-1, 5-LS1-1, 5-LS2-1
- Earth Systems: Earth Materials, Role of Water, Human Impact  
2-ESS2-2, 2-ESS2-3, 4-ESS2-2, 4-ESS3-2, 5-ESS2-1
- Physical Science: Structure and Properties of Matter, 2-PS1-1
- Cause and Effect, Patterns, Influence of Engineering

### Technology

Use of technology for research, use of measurement tools

### Engineering

Designing Model Gardens

### Math

Measurement and Data

### Art

Perceive, develop, and complete artistic work

Ask, “What does the term **biotic** mean?” Review examples of living components.

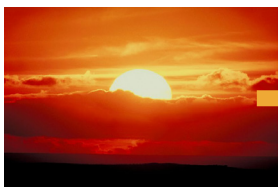
Have students think of a garden. Which parts of a garden are abiotic and which are biotic? Remind students that animals and plants within an ecosystem depend on each other for their survival. What things are placed by humans? Within the garden ecosystem, there may be needs that come up due to weather issues such as lack of rain or temperature changes.

Explain how a rain gauge can be used to determine how much water the garden is receiving naturally and then determine if the garden needs to be watered by humans.

Demonstrate how a thermometer can be used to determine both soil and air temperature as they are components that may determine the growth and survival of plants in a garden. “*How to Use a Thermometer*” can be found at [www.kyreadyssetgrow.org](http://www.kyreadyssetgrow.org).

## Activities

- ✦ Show students pictures or video clips of different types of gardens (include vegetable, flower or pollinator, water gardens and riparian gardens, which are designed to hold the soil in place). Be sure to show the abiotic parts of the gardens (rain, or sprinklers, or someone watering; soil). Examples can be found at [www.kyreadyssetgrow.org](http://www.kyreadyssetgrow.org).
- ✦ Have students **design and draw/color gardens** showing both abiotic and biotic components based on the information they have just been given. The parts should be labeled—abiotic and biotic or living and non-living.
- ✦ Introduce **food chains or food webs** within the ecosystem of a garden and then branch out into a study of ecosystems throughout the world. *See the curriculum connection to the right.*
- ✦ **Treasure Hunt in the Garden** - Give students the *Treasure Hunt* worksheet ([kyreadyssetgrow.org](http://kyreadyssetgrow.org)) and a pencil. Students are given 15 minutes to find the items on their sheets. Encourage them to help one another. When it is not possible to go outside and do the treasure hunt, display posters or pictures of gardens and have students use those to complete the activity. With either indoor or outdoor activity, ask students to defend their answers, as this will be a verbal evaluation of their understanding.
- ✦ **Grade 5 Extensions:**
  - 1) Ask students to describe the garden ecosystem using terms such as geosphere, biosphere, hydrosphere, and atmosphere, and have them explain how they work together.
  - 2) Ask students to research engineering design and technologies that improve conditions in the garden ecosystem to ensure a harvest.



## CURRICULUM CONNECTIONS

### The Farm as an Ecosystem

In this lesson developed by Kentucky Agriculture & Environment in the Classroom and the Kentucky Department of Agriculture, Grade 3+ students will learn:

- ✦ How a farm is an ecosystem
- ✦ Identify the parts of the farm ecosystem and how they interact and depend on one another
- ✦ Identify the producers and consumers in a farm ecosystem
- ✦ Model the food chain/ food web within a farm ecosystem
- ✦ Learn how changes affect the farm ecosystem and availability of food
- ✦ Identify the natural resources in a farm ecosystem and ways to protect them
- ✦ Understand the size of their personal ecosystem

This lesson and its components can be found at [www.teachkyag.org](http://www.teachkyag.org).

Ecosystem game supplies can be printed, purchased or supplied through the KyAEC Sponsor a Classroom program.