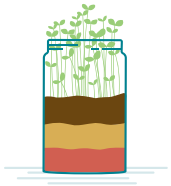
Back to the Roots Garden Toolkit

Unit 5: Terrariums

Overview

Back to the Roots is on a mission to help every kid experience the magic of growing. We're bringing this mission into your home or classroom with Unit 5 of the Garden Toolkit — Terrarium Ecosystems.



In this unit, we'll use our Terrarium Grow Kit to help understand the basics of Earth's ecosystems, how a terrarium acts as a miniature model of one, and finally why microgreens are the perfect plants to grow. What are you waiting for — let's explore the science of ecosystems and how a terrarium works!

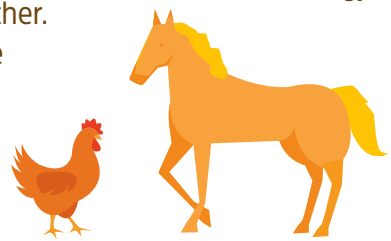
Ecosystem Basics

An **Ecosystem** is a geographic area where all living things (including plants and animals) interact with the nonliving environment to create a cohesive "bubble of life". Those living parts are called **biotic factors**, while the nonliving parts are called **abiotic factors**. Biotic factors include the plants, animals, and all other organisms within the ecosystem. Abiotic factors include things like rocks, sunlight, temperature, and rain.

Our planet Earth is composed of many types of ecosystems — from a lush rainforest, to a dry desert, to the deepest depths of the ocean — and each different kind creates unique forms of life. Inside of each, the biotic and abiotic factors are interacting in distinct ways that make each ecosystem different. These factors also depend on one another for survival.

ACTIVITY: Take a walk around your neighborhood park and bring a notebook. Write down a list of all the things you encounter — which of them are biotic (living), and which are abiotic (nonliving)? Did you ever see items on these two lists interacting with each other?

One important type of ecosystem that supports human life is the **Farm Ecosystem**. The Farm Ecosystem is different from many other ecosystems because humans have control over many of the interactions among the living and nonliving things on the farm. This makes it very important for farmers to understand the different components in their ecosystem to make sure all are in balance and thriving together. The important parts of the Farm Ecosystem include soil, crops, water & sunshine, and animals.



Soil

A farm's soil is the source of most of the nutrients that are needed to help grow plants. Good soil is living soil — meaning that there are millions of microscopic organisms that help make soil highly nutritious.

Crops

Planted in the soil, crops like corn, wheat, and beans are grown on farms to produce food for humans to eat. In addition to the nutrients in the soil, they convert water and sunshine into energy to grow!

Water & Sunshine

Ground water, rain, and sunshine are essential components of **photosynthesis** — the process of creating energy for plants to grow.

Animals

In addition to providing important items such as milk, eggs, and wool, animals also create waste products that contain vital nutrients for plants. Animal waste is a natural fertilizer that farmers rely upon!

Growing Microgreens in a Terrarium

What is a Terrarium?

So what do ecosystems have to do with the terrarium you've made? Well actually, the terrarium you have built is a miniature model of the very important Farm Ecosystem we just learned about! More generally, a **terrarium** is a small scale, human-made ecosystem that mimics the behavior of one type of Earth's ecosystems. Terrariums can contain all different types of living organisms — some are great for reptiles, but the one you've made is for growing plants! Let's examine the different components of your terrarium:

Red and Yellow Sand mimic the deeper layers of the earth

Organic Soil provides nutrients and a place for plants to grow

Organic seeds grow tall and delicious in just 7 days

Just add water & sunshine and you have all the elements of the farm ecosystem!

ACTIVITY: Take a trip to your local greenhouse or botanical garden and explore the types of plants growing. Ask a volunteer about the ecosystems that their gardens are a part of.

Growing Microgreens in a Terrarium

Terrariums can grow all different types of plants, so why have we decided to grow microgreens in ours? Well, we love **microgreens** for a lot of reasons!

They only take a few days to grow

Sometimes you only have a few days to grow something delicious! While microgreens don't exactly look like their fully grown plants, they still have the same flavor — sometimes even more of it!

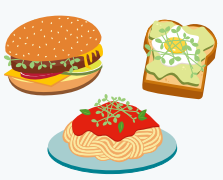
They can be used differently

Because microgreens are small and versatile, they can be used in ways that their fully grown versions can't! You wouldn't put a head of broccoli in a smoothie, would you? But you can certainly add broccoli microgreens — they taste great!

They have all the nutrients you could want

Microgreens may be small, but they pack up to 40 times more nutrients by weight than their fully grown counterparts!

ACTIVITY: Find a recipe that incorporates microgreens and make a delicious meal for your family! Need help finding a recipe? Head to backtotheroots.com for plenty of delicious options!



Questions? www.backtotheroots.com/contact

Activities & Questions

Discussion Questions

1. Besides the Farm Ecosystem, what other ecosystems have you heard of? What are some of the animals & plants that are a part of them?
2. Humans often interact with nature's ecosystems and change them. What are some of the ways that you notice humans changing the environments they live in?

Key Vocabulary

Ecosystem — a geographic area where all living things (including plants and animals) interact with the nonliving environment to create a cohesive "bubble of life".

Biotic Factors — The living organisms in an area such as plants and animals that contribute to the ecosystem.

Abiotic Factors — The nonliving parts such as weather and landscape that contribute to the ecosystem.

Farm Ecosystem — the interaction between biotic and abiotic factors specifically for the purpose of cultivating food for human consumption.

Photosynthesis — The process in which plant leaves convert sunlight, water, and air into energy for the plant to grow.

Terrarium — a small scale, human-made ecosystem that mimics the behavior of one type of Earth's ecosystems.

Microgreens — the tiny, edible shoots grown from plant seeds that are picked about 7–10 days after germination.