Back to the Roots Garden Toolkit

Unit 6: A Seed’s Journey

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 6 of the Garden Toolkit — A Seed’s Journey.

In this unit, we’ll learn about the journey a seed takes to grow from a tiny speck into a hearty plant. We’ll explore the anatomy of a seed, what they need to germinate, how they continue to develop, and what it takes for them to reach maturity. What are you waiting for — let’s explore the life cycle of a plant!

Anatomy of a Seed

Despite their tiny size, seeds are incredibly complex organisms with different parts that perform essential functions. Some parts help to keep the seed safe before it grows, while others help it grow well once you’ve planted it in the garden! Just like with a human — every part of the seed plays an important role in turning it into a thriving plant. Check out the diagram to see just a few of the important parts of a seed!

**Testa** — The testa is the hard outer coat of the seed. It protects the inside parts of the seed from harsh conditions that could cause damage before it has a chance to grow.

**Micropyle** — The micropyle is a tiny opening in the testa that lets water reach the inside of the seed. Without the micropyle, the seed would never know when to open up and start growing!

**Radicle** — The radicle is the baby root of the plant. When the seed germinates, the radicle emerges from the seed first and becomes the primary root for the young plant.

**Epicotyl** — The epicotyl is the baby stem of the plant. Shortly after the radicle, it emerges from a germinated seed and extends upward toward sunlight.

**Cotyledon** — Cotyledons (pronounced “kaa tuh lee duns”) are the first leaves that grow out of the epicotyl when a seed germinates. They store energy for the young plant to use as it grows. Some seeds have two cotyledons, while others only have one.
At this point, a plant has been growing for quite a while, producing lots of green leaves that are helping turn more and more sunlight into energy using photosynthesis. It has also been using many of the nutrients present in the soil, as well. In order to reach mature size, many plants will need additional nutrients. The process of introducing more nutrients to a growing plant is called **Fertilization**.

Once a plant reaches its mature size, it will undergo the next plant growth stage — **Flowering**. In this stage, a plant produces a large number of flower buds that open up and pollinate each other. It is only after flowering that certain plants will begin the last stage of growth — **Fruiting**. This is the most exciting and rewarding part of growing plants, as they will produce lots of delicious fruits and vegetables to eat! As a gardener, be sure to keep feeding plants with fertilizer and water during these growth stages, as plants will need lots of energy!
Activities & Questions

Discussion Questions

1. What is your favorite vegetable to eat? Draw a picture of the plant that it comes from at all its different growth stages.

2. Sometimes plants aren’t so lucky and do not make it through all of the growth stages we just discussed. Can you think of some reasons that a plant may not grow to maturity?

3. FIELD TRIP! Head to your local Farmers Market and ask a farmer how they feed their plants. What nutrients are important for their crops to grow?

Key Vocabulary

Germination — the process in which a seed opens up and begins using it’s stored energy to grow.

Cotyledons — a plant’s first set of leaves. They store energy when inside the seed, and begin to produce energy once they emerge.

Vegetative Growth — an important early growth stage for plants where they produce new leaves and stems.

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

Fertilization — the process of introducing more nutrients like nitrogen, phosphorus, and potassium to a plant so it continues to grow.

Flowering — the plant growth stage where plants produce flower buds to initiate the fruiting process.

Fruiting — the final plant growth stage where plants produce multiple fruits for people to eat.

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