Overview

Back to the Roots is on a mission to help every kid experience the magic of growing their own food. We're bringing this mission into your home or classroom with Unit 4 of the Garden Toolkit — Microgreens 101. What are you waiting for - let's explore the benefits of microgreens and the science behind how they grow!

What are microgreens?

Microgreens are the tiny, edible shoots grown from plant seeds that are picked about 7-10 days after germination. All of your favorite leafy vegetables and herbs can be grown as microgreens - spinach, lettuce, basil, cilantro, and more! Most microgreens only get about 2 to 4 inches tall before they are ready to be harvested - they really are micro!

SPROUT	MICROGREEN	BABY GREEN	ADULT GREEN
2-4 DAYS	7-10 DAYS	2-3 WEEKS	1-2 MONTHS

Why are they good for me?

But wait...why would anyone want to eat a tiny little microgreen when it could grow to be a full plant? That is a really good question! There are a number of reasons why people grow and eat microgreens:

They only take 10 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!

At this point, you may be well on your way to growing some microgreens of your own using our Microgreens Grow Kit. As you grow, let's learn a little bit more about what's going on and how seeds turn into those yummy microgreens!
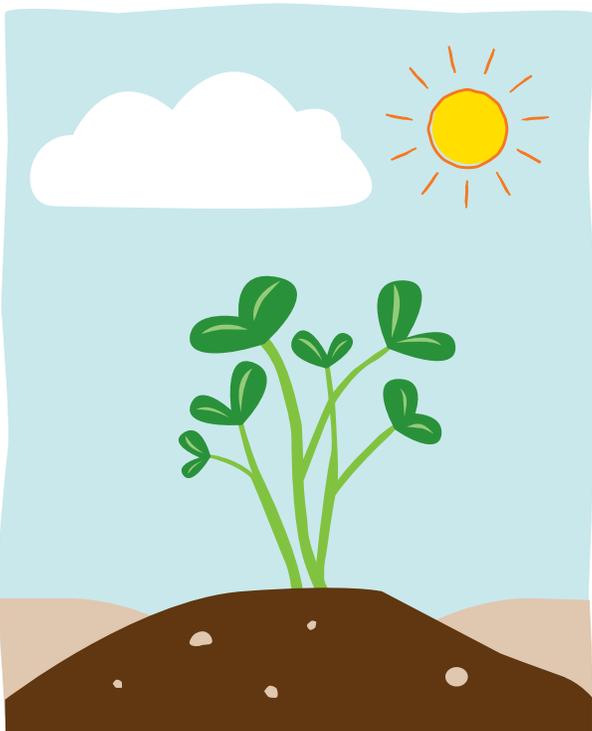
Growing Microgreens

While it only takes 10 days for these magical little plants to grow, microgreens need the right environment to make this happen in such a short amount of time. There are three important ingredients that microgreen seeds need to grow well. They are:
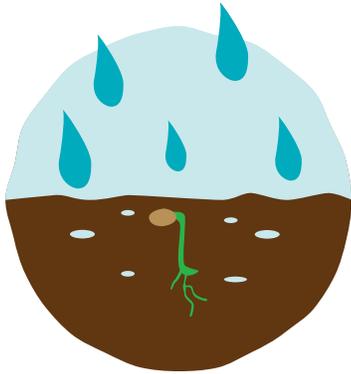
1. Water

The first important ingredient is water. Most living things on earth rely on water to help them grow - and microgreens are no exception. Water molecules help open up the protective shell that seeds have, and they also tell the seed to start releasing energy to grow. This process is called germination. Some seeds take a long time to germinate, but others can start to grow in just a few days. How long did it take your microgreen seeds to germinate? How could you tell that they were starting to grow?
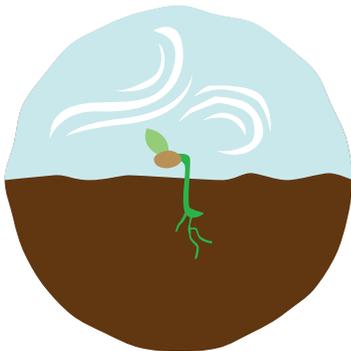
2. Air

The second important ingredient is air. The air all around us has essential molecules that seeds need while they grow. After water has helped open up a seed, the air around it is used by the seed to grow. If a seed did not have air, it would not be able to poke its head out of the soil and spread its first set of leaves. These first leaves are called cotyledons (pronounced "kaa tuh lee duns"). What sorts of places would a seed not have access to the air?
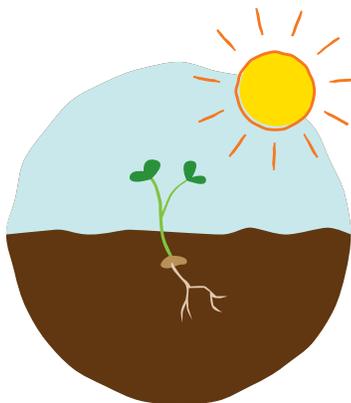
3. Sunlight

The last important ingredient for seeds to grow into microgreens is sunlight. Every seed contains a whole load of energy inside its tiny little shell, that begins to be used by the seed to grow its stem and cotyledons. Once the cotyledons are open and exposed to sunlight, they begin to make more energy for the plant to keep on growing. This process is called photosynthesis. Want to learn more about how photosynthesis works? Watch this video!

https://www.youtube.com/watch?v=lln136eMl4g

With these three important ingredients, your microgreens will be growing healthy and strong - and it only takes 10 days!

Activities and Questions

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.

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

Growth Log:

Each day, draw a picture of what's going on in your grow tray. Describe what you see - what is changing? What is staying the same?

What seeds were included in your microgreen seed packet? Do you recognize any of their names? What are some ways that people eat that type of plant?

If you don't recognize them, go to the grocery store or search online to find out what they look like!

Humans eat plants at all different stages. What foods have you tried or heard about at each of these stages?

- Seed
- Sprout
- Microgreen
- Baby Green
- Mature Green
- Fruit or Vegetable

EXTRA CREDIT:
THE ANATOMY OF A SEED

You just learned the basics of how seeds grow into microgreens, but there are lots of details still to cover! Plant seeds are complex organisms with different parts that perform essential functions. So what does each part do? Let's dig in!
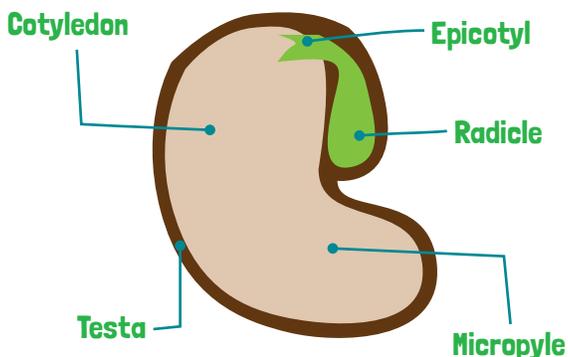
Testa:
The testa is the hard outer coat of the seed. It protects the inside parts of the seed from harsh conditions that could cause damage before it has a chance to grow.

Micropyle:
The micropyle is a tiny opening in the testa that let's 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 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.