



Compost and Compost Tea

Grade Level: 7th

Season: Spring

Larger IGS Unit: Soil

Essential Question: What is compost? How do we build soil?

Objective: Students will explore the soil food web while creating their own system to brew compost tea.

Materials:

5-gallon bucket

Mesh bag or cheesecloth

Compost

Aquarium pump

A few feet of tubing

Molasses

Optional: Kelp meal, azomite, worm castings, sea salt, humates, etc.

How to assemble the Compost Tea brewer:

- Fill mesh bag or cheesecloth (with twisty tie) with compost and amendments
- Fill 5 gallon bucket with water
- Place tubing into bucket (may need to be held down with a weight)
- Place compost tea bag into bucket
- Turn on pump
- Add a spoonful of molasses to feed the organisms!
- Let brew for 24-48 hours
- Once the tea is taken out of the brewer/aerator, use within 4 hours

How to use compost tea (any or all of the below):

- Pour into watering cans and water plants (can be diluted to go further)
- Use during transplanting, dip roots into compost tea before planting
- Pour into spray bottles and use as foliar spray (not to do during the heat of the day, to avoid burning leaves)

Introduction:



Review living vs. nonliving things (Kindergarten flashback!) What do living things need?

Ask students if they think soil is living or nonliving. Why or why not? Encourage students to think of soil as a living organism – it is our job to stimulate more life, and therefore build more soil.

Point out the loss of topsoil across the planet. (5th grade soil science review)

Ask students why they think topsoil is being lost at such a rapid rate.

Explain that we are going to go through an experiment to find the best way to help build topsoil, through brewing compost tea. Introduce the benefits of compost tea, not only for building soil, but also for plant health as a foliar spray.

Review the scientific process.

Identify the question to be answered/explored: how do we build soil? Encourage students to find their own questions within that question.

Activity:

Break students into three groups and hand out soil food webs. Invite students to explore the soil food web and identify the characters with which they are familiar. Explore with the students the progression from bacterial to fungal activity in the soil – compare grass to trees.

Explain the experiment:

Each group will have their own bucket to brew compost tea. They will each have access to different ingredients, and we will test them to see which compost tea aids in plant growth and plant health, and why.

Identify each ingredient and ask students why they think we would include these:

Compost, water, oxygen and molasses are required ingredients.

The additional ingredients may include azomite (volcanic rock dust), worm castings, kelp meal, and humates.

Explain where these ingredients come from and why we need to return them to the soil. Encourage students to think about runoff and erosion, how nutrients are lost in the soil and where they end up.

Explain the procedure:

Compost is a living organism/full of living organisms. We are stimulating reproduction in the bacterial and fungal life in the soil through water and oxygen.

We are feeding the bacteria with sugars (molasses), and we are feeding all of the organisms with various supplements (kelp meal, azomite, worm castings, etc.)

Invite each group to begin developing their own recipe for compost tea.

Each group will create that recipe, and document it.

Each group will have a tray of plants which they will spray with their compost tea in 24-48 hours. They will make observations and come up with a conclusion.



Wrap up/ Assessment:

Experiment Log Sheet with question, hypothesis, procedure, results and conclusion.

Extensions:

Observations of plants