



*Unleashing Innovation Through STEM Education*

[www.stemscholarshub.net](http://www.stemscholarshub.net)

Lesson: Roots and Leaves

Name:

Teacher:

Date:

## Experiment Guide: Roots and Leaves

**Title:** Observing Water Absorption and Transpiration in Plants

---

### Objective:

- Demonstrate how roots absorb water and anchor plants.
- Show evidence of transpiration through condensation in a plastic bag.

### Materials Needed:

- Assorted plant roots (e.g., carrots, radishes)
- Potted plant or cut branch with leaves
- Clear plastic bags
- Tape
- Spray bottles with water
- Observation sheets
- Markers

### Step-by-Step Procedure:

#### Part 1: Roots Observation

1. Distribute assorted roots (carrots, radishes) to students.
2. Ask students to **observe and describe** the structure of roots.
3. Discuss:
  - How do roots help the plant stay in place?
  - Why are roots important for water and nutrient absorption?

#### Part 2: Transpiration Demonstration

1. Spray water lightly on the leaves of a potted plant or cut branch.
2. Cover the leaves with a **clear plastic bag** and seal it with tape.



Unleashing Innovation Through STEM Education

[www.stemscholarshub.net](http://www.stemscholarshub.net)

3. Ask students to **predict** what will happen inside the bag.
4. Leave the setup for 10–15 minutes while continuing the lesson.

### Observation

- After 10–15 minutes, check the inside of the plastic bag.
- Students record what they see: **condensation droplets** forming inside the bag.
- Explain:  
*“This is transpiration—the process where water evaporates from leaves.”*

### Discussion Questions

- Why do plants need roots and leaves?
  - How do roots and leaves work together to keep the plant alive?
  - What would happen if a plant had no roots or no leaves?
- 

### Safety Guidelines

- Handle spray bottles carefully to avoid spills.
- Wash hands after handling plants.
- Monitor students during the activity.