LESSON:

2/5

7TH GRADE GARDEN ROTATION

STANDARDS ALIGNED:

YES

Cuttings Lab

PLACE OF LEARNING:

Garden Classroom

DURATION:

90 minutes

GRADE LEVEL:

Grade 7

CONTRIBUTOR

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TAGS:

Garden
Flowers
Observation

Summary:

In this seventh grade science lesson, students identify desirable traits in plants and take cuttings from parent plants to facilitate asexual propagation and produce offspring with identical DNA.

Student Learning Goals & Objectives:

After this lesson, students will be able to:

- Explain why plants are reproduced asexually
- Understand that asexual offspring are genetically identical to the mother plant
- Use cuttings to propagate perennial plants

Assessments:

During this lesson, students will:

- Identify three reasons for reproducing plants asexually in the garden
- Identify the cutting as genetically identical to the mother plant
- Successfully propagate a plant asexually

Materials & Prep:

Visual Aid
Wooden flat of growing medium (we use perlite)

Perennial plants with branches available for cutting

Examples of a rooted cutting and a mature, potted up cutting

Procedure Steps:

FULL GROUP, 5 MINUTES

1

AT THE OPENING CIRCLE

1. Welcome students and introduce the Cuttings Lab.
2. Explain that students will be rotating through the Cuttings Lab where they will learn how to generate more plants using asexual reproduction.
3. Ask students what they already know about genetics and how traits are passed from generation to generation. Then ask students to share what they know about how plants typically reproduce.
4. Explain that as gardeners, we often produce more plants by sowing seeds in the greenhouse and that the seed is the offspring of the plant. This is sexual reproduction.
5. Explain that today, students will learn how to produce more plants through asexual reproduction and clone them rather than using seeds.
6. Ask students what they think will happen to the DNA when the plants are cloned.
7. Review garden jobs and closing circle activity: tasting.
8. Divide students into 4 working groups, and explain that during their garden jobs, students will take a break to take an asexual cutting from a perennial plant.

SMALL GROUPS, 50 MINUTES

2

AT THE GREENHOUSE

1. Students rotate from their garden jobs to the Cuttings Lab one group at a time.
2. Gather students near the greenhouse and review that in this lab, they will learn one method of generating more plants through asexual reproduction with cuttings.
3. Explain that a cutting refers to a small branch that we take from a mature plant and turn into a clone of the plant from which it was taken.
4. Give examples of some of the traits you look for in a mother plant: fragrance, vigor, disease resistance, color of flower, etc.
5. Reference the Visual Aid and explain the process while demonstrating each step.
    - Show how to take the strike from the mother plant.
    - Explain the importance of exposing the nodes.
    - Trim the upper leaves.
    - Place the cutting at a 45-degree angle in the growing medium.

6. Prompt students to think about why it would benefit the grower to place the strike at an angle rather than straight down.
7. Explain that we use perlite because it is sterile.
8. Review what happens to the DNA of the cutting.
9. Show students an example of a rooted cutting several months old and a mature, one year old potted up cutting.
10. Ask students why a grower would choose to use asexual propagation. Discuss with students that there are three main reasons:
    - It is faster than propagating by seed.
    - You can select desirable traits.
    - It is cost effective.
11. Explain that students will walk through the garden and collect strikes from perennial plants to bring back and place in the tray of perlite.

    - Have each student take a cutting of the perennial plant, expose the nodes and trim the upper leaves.

    - Once all students have taken a cutting, have each one place their cutting in the wooden flat at a 45-degree angle, label it, and have one student water the flat when everyone is finished.

12. As students are preparing their cuttings, ask them the following questions.

    - Are these cuttings genetically identical to the mother plant? (yes!)

    - Why is it important to expose the nodes? (from the nodes branches, leaves, or roots can grow).

    - Why do we clip off the upper leaves on a cutting? (to minimize transpiration and help keep the plant moist)

FULL GROUP, 15 MINUTES

AT THE CLOSING CIRCLE

1. Have a few students serve a seasonal fruit, vegetable or herb tasting from the garden.

Downloads

CUTTINGS LAB VISUAL AID

Vocabulary:

Perennial
Cutting

Asexual reproduction
Traits

DNA

PREVIOUS LESSON

LESSON:

2/5

IN "7TH GRADE GARDEN ROTATION"

NEXT LESSON
