



Lesson:

Munching Insects

Ages:

6th-8th grade, 9th-12th grade

Time:

Observation: 30 minutes

Insect Collection: 30 minutes

Experiment Set-up: 30 minutes

Experiment Observation: 5-10 minutes every 2-3 hours.

Conclusions/Presentations: 1-2 hours

Overview:

Students design an experiment to discover what types of plants particular insects prefer.

Goals:

Students will understand that insects eat only specific plants and that this has particular implications for noxious weeds.

Objectives:

1. Students will observe and collect insects and plants.
2. Students will be able to formulate an experiments based on the Scientific Method.
3. Students will be able to describe the relationships between insects and plants.
4. Students will conduct an experiment and draw conclusions.

Materials:

Per Student:

Insect Observation worksheet

Individual Observations worksheet

Nets for collecting insects

Glass jars with lids

Two Petri dishes

Per Class:

Class Observations worksheet

Outline:

1. Students develop a question and hypothesis about what insects eat.
2. Students create an experiment to test their hypothesis.
3. Students present their findings and their implications.

Details:

Tell the students that particular insects often eat only specific plants, and often only specific parts of that plant. While native plants have had a very long time to evolve with native insects and develop predator-prey relationships, non-native plants have not had the time to develop these relationships. This gives non-native plants the advantage of not having predatorial controls.

To begin, take the students outside to observe insects. Have the students take careful notes on the Insect Observation worksheet about what type of insect is eating what type of plants. Knowing the name of the insect is not necessary; students can describe the insect and give it their own name. It would be helpful, however, for students to be able to identify some of the plants.

In the classroom, have the students formulate a hypothesis based on their observations. An example of an appropriate hypothesis is: The small green insect (aphid) will eat primarily the leaves of a tomato plant. The students may design their own experiment to test their hypothesis or the class can use the following experiment.

Return to the area where the students observed the insects. Have them collect a few insects of as many species as they can in glass jars. Be sure the jars have small holes in the top for air, but no food. (Try to separate insects by species so they don't eat each other while in the jars.) Leave the insects in the jars for about twenty-four hours without food. Students should also collect three types of plants (leaves and roots).

The next day students should each be given two Petri dishes. In the first Petri dish place three equally sized pieces of different leaves around the edge of the dish. In the second Petri dish place three equally sized pieces of three species of roots. Next put one species of insect in each dish. Different students may use different combinations of insects and plants. Every two to three hours check the dishes and note which leaves and roots are being munched on. Record the results on the Individual Observations worksheet.

Wrap-up/Evaluation:

Compile all of the students' results onto the Class Observation worksheet. Ask the students what they can conclude from this data. If insects eat particular plants what implications does that have for non-native plants?

Modifications/Extensions:

Students may research biocontrols of noxious weeds, exploring the pros and cons of this approach to weed control and the practicality of it. Their findings can be recorded as a paper and/or a class presentation.

Students may research one particular noxious weed and the biocontrols being used or researched for

eradication of this plant. Their findings can be recorded as a paper and/or a class presentation.