Grade: 6 to 8

Length: long term (This lesson may require up to seven hours, depending on the amount of research and discussion.)

Subjects: life science, botany, writing

Topics: defining plants as weeds, weed adaptations, researching and reporting why a weed is a problem

Objectives

Exercises in this lesson help students achieve the following objectives:

- Conduct research to learn about the diversity of invasive plant characteristics and adaptations
- Understand why some plants are considered a weed
- Understand the adaptations and conditions that enable weeds to spread and become established

Introduction

Students will conduct research and report on the history of, problems associated with, characteristics and adaptations of, and control methods for a particular invasive plant species in your area. Students will share the findings from their research with the class. Students will use the information from this report in other lessons within this curriculum. Before teaching this lesson, read the entire lesson and make sure all materials are available.

Background

Plants have evolved over millions of years and developed a wide range of **adaptations** for the ecosystems where we find them today. Plants have developed methods to take advantage of available resources; fend off insects, disease, and animals; and compete with other plants for nutrients, water, and sunlight. Each plant occupies a particular **niche** within the environment.

A **weed** is any plant that is unwanted where it is growing, is difficult to eliminate, has the ability to spread, and grows in an area to which it has not adapted. A rose may be considered a weed if it is growing in a location where it is unwanted. Weeds are a nuisance to humans because weeds degrade the land, lower crop and **range** yields, poison livestock that **forage** on them, and alter water tables.

A plant becomes an invasive species when it grows and reproduces quickly and out-competes the desirable plants for nutrients, water, and sunlight. Invasive weeds disrupt the **biodiversity** of the native plant **community**.

In a healthy **ecosystem**, species that normally live in the ecosystem are in balance with one another. When a new plant enters an ecosystem, the diseases, insects, and animals that normally keep the plant's population in balance or under control are not present. Without these checks and balances to control the plant, it invades the ecosystem. Invasive weed species are plants that have been introduced into an ecosystem in which they normally do not live.

Preparation

Materials

- bouquet of roses – Use live specimens or silk models.

1. At the beginning of class, place a bouquet of roses at the front of the room.
2. Ask students if a rose is a weed. Discuss examples of native plants, ornamental plants

from a nursery, and invasive weeds. Have students identify which plants are weeds.

3 Ask again if a rose is a weed. Encourage students to discuss the definition of a weed; allow students to create their own definition.

Activity

Materials

- list of invasive weed species for your area – County weed boards, extension offices, and state and federal agencies can provide information about invasive weeds in your area.
- copies of the *Invasive Plant Species Report* worksheet – Have available one copy for each student.

1 Using the list of invasive weed species for your area, randomly assign a different plant species to each student. Or depending on the number of invasive species in your area and the number of students, assign a species to a team of students.

2 Give each student a copy of the *Invasive Plant Species Report* worksheet.

Ask students to conduct research on their plant and, using the worksheet as a guide, prepare a rough draft of a report that describes the characteristics and adaptations of the plant.

Tell students that they will share their report with the class.

3 Have students prepare their final report.

Conclusion and Evaluation

- Give each student copies of the *Invasive Plant Species Report* worksheet so they can take notes while listening to oral presentations. Conclude the lesson by having each student make an oral presentation of their final report to the class.
- To evaluate students, test students on the information covered during the oral presentations.

  Use the *Weedy Definitions* and *Solve the Weedy Code* worksheets as an extra exercise (optional).

Independent Practice and Related Activities

- Have students create a poster or display for the plant on which they reported.
- Have students create costumes and prepare a skit that they can present to younger students.
- Have students make an oral presentation of their report in a community outreach program.

Vocabulary

adaptations, biodiversity, community, ecosystem, forage, niche, range, weed

Resources

County weed boards, extension offices, and state and federal agencies can provide information on invasive weed species.

National Plant Database. **www.plants.usda.gov**

Utah State University Extension, The Weed Web. **http://extension.usu.edu/weedweb/ident/ID.htm**

National Science Education Standards

As a result of their activities in grades 5 to 8, students should develop abilities in and an understanding of the following areas:

Science as Inquiry – Content Standard A: scientific inquiry

Life Science - Content Standard C: structure and function in living systems, reproduction and heredity, regulation and behavior, populations and ecosystems, diversity and adaptations of organisms

Science in Personal and Social Perspectives - Content Standard F: personal health; populations, resources, and environments; natural hazards; risks and benefits; science and technology in society

History and Nature of Science - Content Standard G: science as a human endeavor, the nature of science

Weed Warrior Worksheet

Invasive Plant Species Report

Common name of your plant_____ Scientific name _____

Prepare a rough draft

Conduct research about your plant. Use this worksheet to write information for the report's rough draft. After you have collected all of the information, write a final report. Include the following information in your report:

1. Origin of the plant _____

2. How the plant was transported or introduced to the United States _____

3. When the plant entered the United States _____

4. Description of the plant, its habitat, and where it is found in your area _____

Invasive Plant Species Report Page 2 of 2

5. Your personal connection with this plant (if any) ______________________

6. Characteristics (adaptations) and conditions that enabled this plant to become established ______________________

7. Why this plant is a problem (Describe how the plant affects the environment and the area's economy.) ______________________

8. Control methods for this plant ______________________

9. Conclusion and summary ______________________

10. Bibliography ______________________

11. Photos or illustrations of your plant ______________________

Weedy Definitions

adaptation – changes an organism makes so it will fit into a different or changing environment

biodiversity – all of the species that are present in a particular area or an ecosystem

community – all the plants and animals that live in the same area and interact with one another

ecosystem – all of the biotic and abiotic things in a particular area that interact with each other

forage – food for animals, especially crops grown to feed horses, cattle, and other livestock

niche – the place or position of an organism within its environment *Each plant occupies a particular niche within the environment.*

range – a large area of open land on which animals can graze

weed – any plant out of place, unwanted where it is growing, difficult to get rid of, with an ability to spread

Weed Warrior Worksheet

Solve the Secret Weedy Code

Match the letters of the alphabet with the numbers and fill in the letters to create these words:

niche **ecosystem** **biodiversity** **weed** **forage**
adaptations **community** **range**

Hint: The code number for "S" is 15.

A	B	C	D	E	F	G	H	I	J	k	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
																		15							

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ S
19 8 19 1 18 19 18 17 6 11 15

___ ___ ___ ___ ___ ___
5 6 20 19 16 10

___ ___ ___ ___ ___ ___ ___ ___ S ___ ___ ___
22 17 6 8 17 7 10 20 15 17 18 25

___ ___ ___ ___ ___
11 17 4 14 10

___ ___ ___ ___ ___ ___ ___ ___ ___
4 6 2 2 21 11 17 18 25

___ ___ ___ ___ ___
20 19 11 16 10

___ ___ ___ S ___ S ___ ___ ___
10 4 6 15 25 15 18 10 2

___ ___ ___ ___
13 10 10 8