Unit 4 Lesson 2: Weed Wise

Focus Areas: Plant Lifestyles; Science
Focus Skills: observing, conducting an experiment, understanding cause and effect, recording scientific data

Objectives

- To understand that weeds are particularly well suited for survival
- To recognize that weeds can pose a threat to more desirable plants

Essential Questions

- What are weeds?
- Why do weeds grow so well in so many places?
- How can weeds harm the environment?

Essential Understandings

- Weeds can grow in many places and crowd out healthy crops or decorative plants.
- Weeds have many seeds that are able to survive for long periods of time in a dormant state.
- Weeds have very strong roots that resist removal.

Background

There are approximately 250,000 species of plants worldwide. Of those, about 3% or 8,000 species behave as weeds.

Weeds are particularly well suited for survival. Their roots are strong and often intricate or deep. Furthermore, many weeds can produce new plants from stem fragments and roots as well as from seeds. Their numerous seeds are easily spread and adapt well to unfriendly conditions. Once weed seeds find a suitable environment, they will take over an area using the nutrients, water, light, and space desired for crops

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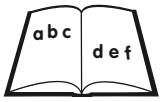
and decorative plants. For example, the common weed dandelion adds beauty to fields and many open spaces, and dandelion greens can be eaten. However, flower heads produce abundant ripening seeds. The mature seeds are unique because they have parachute-like structures that can carry them over the countryside on windy days and allow them to invade lawns and gardens where they put down a single deep root. Left to grow unrestricted, dandelions' bright yellow flowers will take over an entire lawn in no time.

The encroachment of weeds into gardens, croplands, forests, and wetlands threatens biological diversity in North America. Weeds and other non-native plants change the natural environment of the area they invade. In driving out other plants, they may upset the food chain of the habitat they occupy.

Vocabulary



crabgrass	a very hardy weed that invades lawns and gardens
dandelion	a plant having many-rayed yellow flower heads and deeply notched leaves
dormant	a period of time when plant seeds wait before growing
germinate	a time when seeds begin to grow
herbicide	a chemical powder or spray used to kill unwanted plants
invade	to encroach or intrude on

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non-native plant a plant that is brought into an area from somewhere else but adapts to its new environment and is able to survive

poison a substance that causes injury, illness, or death, especially by chemical means

pollution contamination of soil, water, or the atmosphere by the discharge of harmful substances

weed a plant considered undesirable, unattractive, or troublesome, especially one growing where it is not wanted, as in a garden

Logistics

Time: 20 to 30 minutes, 5-minute observations over a period of weeks
Group Size: 2 to 30
Space: classroom

Materials

dandelions, Oriental bittersweet, crabgrass, or other available weeds (pictures or samples if possible)
a living dandelion planted in a pot
radish, crabgrass, and dandelion seeds
small plastic plates and cups (enough for each individual or team of children)

Preparation

1. Assemble the variety of plant species of weeds and flowers.
2. Procure seeds, dirt, small plastic plates, and cups.
3. Punch 3 or 4 holes in the bottom of the cup with a pencil.

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Activity

Introduction

1. Display pictures or samples of common weeds.
2. Ask the participants to identify the plants. How are they different from one another?

    - One is edible – provides food (dandelion)
    - One is used to decorate (bittersweet)
    - One is neither – (crabgrass)
    - All are "pushy plants" that like to move in and take over other plants' habitats.

3. Izzy shows the group the crabgrass and asks, "How do you think it got its name?" Izzy shows the roots and explains how the plant's roots cling to the soil and make it difficult to rip out.
4. Izzy shows the potted dandelion to the group, calling the children's attention to the leaf. Print on the board: ***dandelion*** = ***"dent de lion" = lion's tooth***. Izzy tells the children, "The leaves of the dandelion are toothed with points that slant towards the ground. Most plant's leaves are pointed and their serrations slant towards the tip. Because of the leaf shape, the French named the plant "dent de lion," meaning lion's tooth, and from this came the English word dandelion."
5. Izzy asks for a volunteer to attempt to pull the dandelion out of the pot. (Without a trowel, it is impossible to obtain the entire root. The child will probably "pick" the flower and the stem.) Izzy asks the group if they think the entire dandelion is gone. Then he gives another volunteer a trowel and tells him/her to dig down and see if they find any more of the dandelion. (The taproot will be found.) Izzy asks how this root helps dandelions to survive.

6. Izzy asks what other "tricks" weeds use to survive. [They produce many seeds. (Remind them of blowing the dandelion fluff when they were little.)] Other ideas may be suggested; see **Background**.
7. Izzy explains that this is why so many people choose to use sprays and poisons called "weed killers." Unfortunately, these **herbicides** kill other things too, like desirable plants. These chemicals also can leak through the ground into our wells or wash into rivers, lakes, and streams.
8. Izzy discusses methods of weed control that are the safest. (dig out weeds, keep areas weed-free by maintaining a healthy lawn or garden, mulching, prevent the spread of seeds vs. chemical control)

Involvement

1. Have the children plant radish, dandelion, and grass seeds in the same container.
2. Ask them to form a hypothesis on what they think will happen by considering the following questions:

    a. Which seeds will sprout first?
    b. Which will grow fastest?
    c. Of which plant will we have the most at the end of two weeks?

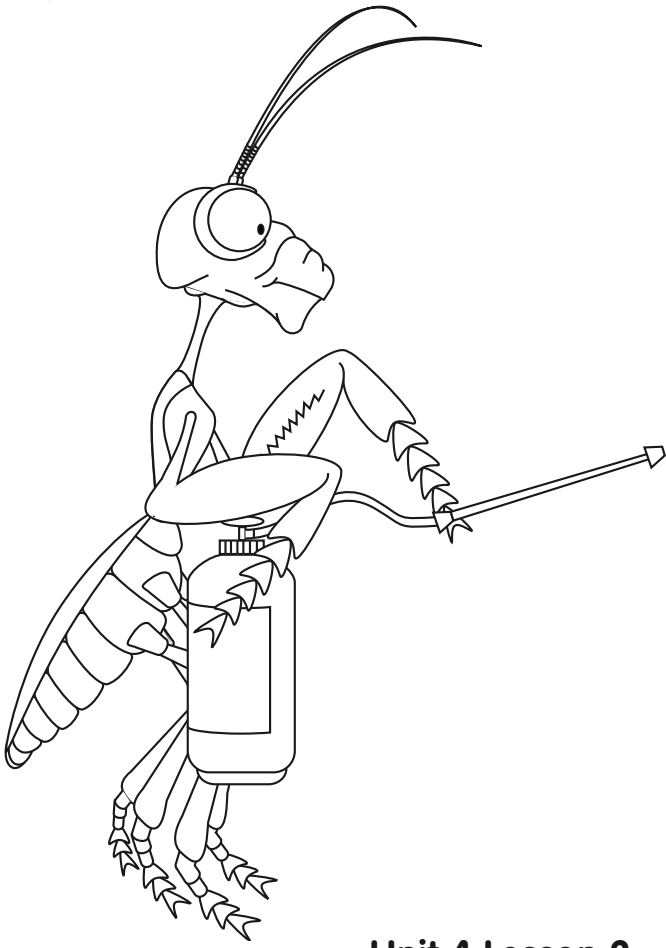
3. Have the children write the answers to these questions in a science journal or a notebook.
4. Over the next two weeks, the children will care for their mini gardens, observe the competition between a crop (the radishes) and the weeds (the grass and dandelions). (The weeds will crowd out the radish crop.). Have the children record what they observe each time in a sentence or two using their journal or notebook.
5. When the experiment is finished, the children will share their observations and discuss the validity of their original hypothesis.

6. Izzy explains that it is important to control weeds in order to increase the amount of food farmers can produce. However, using chemicals to kill weeds as a first choice can be harmful to people as well. "We'd be better off without them!" (the weeds and the chemical controls)

Follow Up

Izzy leads the children in the verse of the *IPM Song*. (Tune: *If You're Happy and You Know It*)

When weeds invade your garden…IPM
When weeds invade your garden…IPM
When weeds invade your space
Dig them up don't leave a trace
That's the best solution…IPM



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