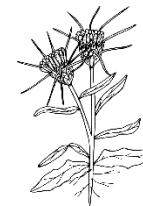




Design Your Own Invasive Plant



Objective Understand what an adaptation is and how it allows invasive plants to successfully invade an ecosystem. Use this knowledge to design an imaginary invasive plant.

Audience 1 or more participants; ages 8+

Duration 15 minutes

Materials

- Paper and colored pencils
- Worksheet (next page) for each participant or group of participants
- *Optional* - Arts and crafts supplies (ex. pipe cleaners, construction paper, tissue paper, scissors, tape, glue, paper towel rolls, etc.)

Background All plants need sunlight, water, nutrients, and space to survive and reproduce. Plants are constantly competing for these necessities and have evolved strategies, or adaptations, to obtain these precious resources.

An **adaptation** is a trait or behavior that helps an organism to better survive and reproduce in its environment. Some interesting examples of invasive plant adaptations include:

- Shrub honeysuckle grows leaves earlier in the spring than locally evolved plants. This adaptation gives honeysuckle the advantage of photosynthesizing for a longer period of time, thus extending its growing season.
- Purple loosestrife has adapted to produce between 2.5 to 2.7 million seeds each year! This adaptation greatly increases the plant's likelihood of successful reproduction.
- Garlic mustard is allelopathic, which means it exudes phytochemicals into the soil that disrupts neighboring plants' ability to absorb nutrients from the soil. This adaptation allows garlic mustard to monopolize the forest floor.

These adaptations, along with other factors such as a lack of predators, competitors, and diseases, give invasive plants a competitive edge that allows them to outcompete locally evolved plants. It is important to stress to participants that *all* plants (not just invasive plants) have adaptations.

Procedure

1. Go over the definition of an adaptation.
2. Ask participants to give some examples of adaptations. Share some specific examples of adaptations that invasive plants have that make them so successful.
3. Working in small groups, have participants design and name their own invasive plant using the worksheet below for guidance. Make sure participants incorporate at least 5 adaptations and discuss how those adaptations will be helpful to their plant. Participants can draw their invasive plant or craft a physical model, depending on availability of resources.
4. Have participants share their imaginary invasive plant with the group, highlighting their favorite adaptation(s).

Design your own invasive plant! Think back to our discussion on the adaptations that make invasive plants so successful at taking dominating new-to-them habitats. Remember, all plants are competing for sunlight, water, nutrients, and space! What will make your species the most successful at obtaining these precious resources? Fill out the work sheet, then draw and label your plant. Make sure you include at least 5 adaptations.

Circle one option for each, or write your own

<i>Habitat: Where does it live?</i>	Forest	Wetland	Meadow	Pond or stream edge	
<i>How does it compete with other plants?</i>	Fast growing	Grows in shade	Big leaves/lots of leaves	Large root system	Allelopathy
<i>How does it protect itself from herbivores?</i>	Thorns	Sticky	Bad taste	Poisonous	Hairy
<i>How does it reproduce?</i>	rhizomes (asexual)	root sprouts (asexual)	seeds (sexual)		
<i>How many seeds does it have?</i>	1-10	11-100	101-1000	1001-10,000	10,000+
<i>How does it spread its seeds? (seed dispersal)</i>	blown by the wind	fall to the ground	ejected from seed pod	consumed, then dispersed by animals	attach to fur

What does it look like? Describe any notable characteristics like the color, texture, arrangement and fragrance of any flowers, fruits, leaves, bark, roots, or anything else you can think of:

What are the costs and benefits of each of your plant's adaptations?

Why do you consider this species an invasive plant?

Optional: On the back of this sheet, draw your plant in its habitat. Label its different adaptations and characteristics.