

Materials

- Magnifying glasses (1 per student group)
- Garden journals and pencils
- *Insect Fact Match-Up Envelopes (Photos of Pests and Beneficial Insects with labels)*
- (Optional) Insect ID Cards: Aphidius Wasp, Green Lacewing, Honeybee, Lady Beetle, Aphid, Flea Beetle, Slug, Corn Earworm
- (Optional) Bug Guide (see “Identifying Insects LP”)

Preparation

- Make copies of Insect Fact Match-Up: Laminate and cut out.
- Put together group envelopes:
 - 3 Pest and 3 Beneficial insect photos
 - 3 labels each: “Pest” and “Beneficial”
 - Label for each insect w/ garden job/damage
 - Label with name of each insect

PROCEDURE

Part 1: Introduce Social vs. Solitary and Pests vs. Beneficial Insects

- “Insects and humans share similarities. Like humans, insects require food, water, and rest throughout their life cycle. Some insects, like ants and bees, are more social. They work together in large groups to get a job done. Other bugs, like spiders, are more solitary. They spend most of their lives alone.
- Some insects love to get their food from our garden crops. Gardeners refer to some of these insects as *pests*.” Prepare students to look for garden pests by showing photos from Insect Fact Match Up, giving students an idea of what to look for. Instruct students to look for damage such as holes in leaves and plant discoloration when looking for garden pests.
- “There are other insects that actually benefit the garden by feeding on pests or helping to pollinate flowers. We call these *beneficial insects*. Do you know of any beneficial insects?” Brainstorm and discuss.

Part 2: Searching for Pests and Beneficial Insects

- Demonstrate the activity by finding a pest or beneficial insect to investigate together in the garden. First observe the insect and its behavior before taking a guess as to whether it is solitary or social, a pest or beneficial.
- Split students into small groups and pass out Insect ID Cards and magnifying glasses.
- “You will now get into groups to identify both pests and beneficial insects in the garden. Your Insect ID Cards will help you to figure out the names and garden jobs of the insects you find. In your group, work to find at least one beneficial insect and one pest in our garden.”
- Let students search the garden for bugs. Have the students observe the bug’s behavior to see if they think the insect is social or solitary, a pest or beneficial. Come back together after 10 -15 minutes to share findings.

Part 3: Recap and Review

- Regroup as a class. Ask each group to share one beneficial insect they found and the role it plays in the garden.
- As a class, play the Insect Fact Match Up to review. Help students to ID insect photos with: 1. insect name 2. “pest” or “beneficial” and 3. description of the insect’s garden job or the damage it does in the garden.

Note: This lesson works well as a follow-up to our “Identifying Insects” Lesson Plan, as students would be already familiar with the process of discovering and identifying insects in the garden.

Pests and Beneficial Insects

Food & Technology

ENGAGE

“Today’s garden lesson will focus on insects. What insects have you seen in the garden? What are the jobs or roles of these insects in the garden?”

Today we will talk about “pest” and “beneficial” insects. (Write those words on the board.) Which word do you think describes a helping insect? Which word describes an insect that harms the garden?” Discuss.

Objectives

- Students will be able to explain the difference between social and solitary bugs, as well as between pests and beneficial insects, and will be able to identify each in the garden.
- Students will be able to explain one way that beneficial insects are helpful to plants and people

EXPLAIN

Beneficial Insects

All insects share the same mission – to seek out the resources they need to survive while reproducing the next generation of insects. Whether an insect is classified as a “pest” or “beneficial” depends on human perspective. Flea beetles, for example, are just trying to find a bite to eat. Unfortunately, they foolishly decided to set up their all-you-can-eat foliage buffet in our turnip bed. As gardeners, we are more interested in guaranteeing the success of our turnips than nourishing a gang of ravenous flea beetles at the expense of our crop. The gardener’s decision is easy: the flea beetles have got to go.

There are many ways to keep pest populations in check. Many industrial farms resort to using chemical pesticides to manage pest outbreaks. Unfortunately, insects develop resistance to the pesticides over time, requiring the use of stronger, more potent pesticides from year to year. Rather than resorting to the use of chemical pest controls, organic farmers and gardeners like to encourage healthy populations of *beneficial insects*. Beneficial insects feed on common garden pests, offering a natural, environmentally friendly form of pest control. Other beneficial insects are especially appreciated for the role they play in pollinating flowers. Bees, for example, transfer pollen grains between flowers, successfully fertilizing the flower and enabling fruit production. Without the assistance of pollinators, gardeners would be forced to pollinate by hand, an incredibly time-consuming task! We can attract beneficial insects to our garden by providing them with suitable living conditions and plenty of food. For this reason, it is wise to plant a mix of flowers, perennials, and annual edibles, which serve as habits and food sources.

ADDITIONAL CONTENT INTEGRATION (see previous page)

After students complete the Insect Fact Match-Up, discuss the following questions as a class: “In what ways are these insects helpful to people? What is one interesting fact you learned? How did you feel about insects before/after the game? Has your opinion changed? “

Some other examples of common pests in our gardens include: leaf miners in the spinach, cabbage loopers on the brassicas, aphids on the lettuce, and slugs eating plants close to the ground.

Additional Materials

- Pictures of flea beetle and crops damaged by flea beetles (Engage)
- Supplemental material on other common pests and examples of pest damage

EVALUATE

Journal prompt: Name one beneficial insect that you learned about today. In what ways is this insect helpful to people or to plants?



For matching game, please laminate and cut along dotted line...



Lady Bug

Beneficial

Eats Aphids



Aphid

Pest

Sucks Sugars from Plants



Bee

Leaf Miner

Beneficial

Pest

Pollinates Flowers

Lays Eggs Inside Leafs



Aphidius Wasp

Flea Beetle

Beneficial

Pest

Lays Eggs Inside Aphids

Chomps Small Holes in Leafs