



***Dedicated
to Reducing
Pesticides***

Unit 4 Lesson 1: A Pest by Any Other Name

Focus Areas: Pest Control: Biological; Environmental Science, Language Arts

Focus Skills: critical thinking, conducting research, observing, graphing, interpreting data

Objectives

- To explore human attitudes toward “bugs”
- To understand the role insects play in nature
- To examine helpful and harmful pests and pals
- To devise alternative methods, other than chemicals, to control pests

Essential Questions

- Of what use are insects?
- How are these pests currently controlled?
- Is there a safer way to control pests?

Essential Understandings

- There are many ways that insects are useful to us, such as pollinating plants, controlling pests, and providing food for other animals.
- Insect pests may be controlled with mechanical devices, using beneficial insects (biological control), sanitary practices, and chemical applications.
- Many pests that bother humans could be controlled to a greater degree with alternative methods other than chemicals that persist in the environment.

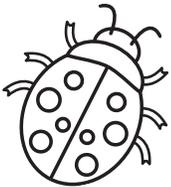
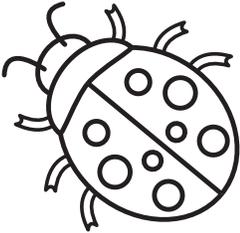


University of
Connecticut
College of Agriculture
and Natural Resources
Cooperative Extension System



Unit 4 Lesson 1: A Pest by Any Other Name

Background



It used to be that when people had a problem with insects, they used poisons right away to control them. Chemical pesticides seemed like the fastest and easiest solution to a pest problem. Rachel Carson's book, *Silent Spring*, made people aware for the first time that these chemicals can have terrible side effects on all living things. Some chemicals kill many kinds of animals besides the pests that are targeted. Many seep into the soil, contaminating groundwater supplies, lakes, rivers, and food sources. Many persist for a long time, poisoning the environment for hundreds of years.

Today, scientists and entomologists are encouraging people to use other methods to control pests. Integrated Pest Management (IPM) uses a variety of pest control techniques to create a more efficient and safe way to manage insect pests. Some of these methods include: natural predators and parasites, mixing plantings, habitat changes, chemicals, timing, mechanical removal, and pheromones.

Physical and mechanical controls are some of the safest ways to control insect pests because they are not poisonous. They include: installing window screens, using flyswatters, planting marigolds to repel insect pests in the garden, using sticky, nonpoisonous tape, and putting up mosquito netting.

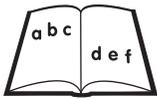
Biological controls include insect parasites, predators, or pathogens and they are safer than poisons because they don't harm other living things. Some examples are: encouraging birds such as bluebirds and purple martins to nest in your yard; releasing ladybird beetles, lacewing larvae, and other natural insect predators to control aphids and other pests; releasing parasites; and using species-specific natural pathogens to kill various pest species.

Chemical control is the most dangerous form of pest control. Even



Unit 4 Lesson 1: A Pest by Any Other Name

though they appear to be effective initially, many insects become resistant to chemicals with prolonged use. Insect poisons are deadly to many types of living things. They contaminate the soil for years to come and are difficult to dispose of safely. Most scientists agree that other strategies should be tried before resorting to using chemicals. If you do use poisons, use the least amount necessary, follow the directions, and dispose of the remainder properly. Never apply pesticides when children or pets are nearby, and be sure to store them in a safe place.



Vocabulary

arachnid	a creature with eight legs and two major body parts
chemical control	the use of natural or synthetic powders, pellets, or sprays to control pests
cultural control	changing the habitat to control many pest species. For example, getting rid of standing water in buckets can eliminate a potential mosquito breeding area.
entomologist	a scientist who studies insects
insect	a creature with six legs and three major body parts
larva	an immature stage of some insects
mechanical control	tools, machines, or equipment that aid in pest management (Examples: screens, fences)
metamorphosis	the three or four separate stages an insect passes through from egg to adult



Unit 4 Lesson 1: A Pest by Any Other Name

mixed plantings	planting mixed stands of crops instead of planting large areas with just one type of plant. Mixed stands are not as susceptible to insect damage.
natural parasites	bacteria, viruses, and insect parasites that will kill pests but won't harm other living things
natural predators	animals that will eat pests. Bats, ladybugs, praying mantids, garter snakes, toads, and purple martins are all examples of natural predators.
pheromones	natural and synthetic chemicals to attract or confuse insect pests
timing	planting and harvesting crops to avoid those times when insects are most abundant and active



Logistics

Time: 45 minutes to 1 hour for the **Introduction** and **Involvement**

Group Size: 5 to 30

Space: an area with comfortable seating



Materials

Handout 1 "Anti-Insect Items" *

Handout 2 "'Pest or Pal' Bug List" *

Handout 3 "Wanted" poster *

Bugs by David T. Greenberg *

IPM Control Methods word cards *

Assessment for an Illustration or Poster *

* single copy provided



Unit 4 Lesson 1: A Pest by Any Other Name

Preparation



1. Obtain the *Bugs* book from the kit.
2. Make copies of Handout 1, “Anti-Insect Items,” Handout 2, “Pest or Pal’ Bug List,” and Handout 3, “Wanted” poster.
3. Obtain the IPM Control Methods word cards.

Activity

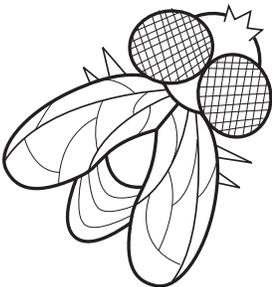


Challenge: Find alternative methods of pest management!

(Display for group viewing)

Introduction

1. Read *Bugs* by David T. Greenberg.
2. Discuss the book by asking the following questions:
 - Which bugs in the book are ‘pals’, friendly insects that might make great pets? (Allow the children to share, but remind them that insects should be allowed to live in nature and not be trapped in a jar.)
 - Which creatures in the book have children had problems with? Which ones are pests to people?



3. Read the poem:

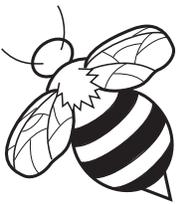
*Oh, in your clothes they’re restin’
In your nose they’re nestin’
There isn’t any question.
They’re infestin’ your intestine.*



Unit 4 Lesson 1: A Pest by Any Other Name

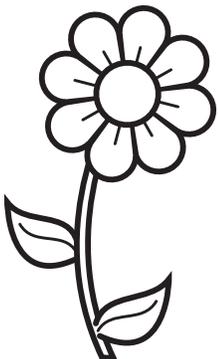
4. Ask the children to identify where “bugs” (microorganisms or small insects) are on humans and their pets.
 - eyebrows - tiny mites
 - fleas on pets
 - lice on hair
5. Are there cultures where people really eat insects such as chocolate covered ants and beetles? Why? (Insects are a source of protein.)
6. Why do scientists called entomologists collect insects? Do they need to? Would you like to be in a “Human Being Collection?” Why or why not? (Entomologists collect insects to study them, identify them, determine their role in an ecosystem, and find out if they are helpful or harmful.)

Involvement



Paraphrase the **Background** information.

Explain to the participants that not all insects are pests. Brainstorm a list on the board of all the reasons why people **need** insects.



- They are plant pollinators
- They provide honey, shellac, wax, and silk
- They control other pests
- They provide food for many birds, fish, and other animals, including people
- They are used to treat diseases in people
- They provide information through experimentation on heredity, evolution, and other science research topics
- They are indicators of pollution
- They are fascinating to observe and study



Unit 4 Lesson 1: A Pest by Any Other Name

Brainstorm a list of the reasons why insects can be pests:

- They attack and damage crops
- They spread plant diseases
- They transmit diseases to humans
- They infest households (fleas, cockroaches)
- They bite and sting
- They ruin groceries such as flour, sugar, popcorn, and rice
- People sometimes use poisons for control that impact other living things

1. Just as there are different opinions about pests, there are different ways to control them. Ask the children to describe how their families control insect pests. (Record the answers.) Explain that it is important to control insect pests in a way that will do the least amount of harm to the environment.
2. Distribute Handout 1, “Anti-Insect Items” and tell the children that they are going to work with their parents or other adults to find out which of these items they have and use at home. The next day, tally the results and graph them. List the items on the horizontal axis and the number on the vertical axis. Discuss the results and talk about safe pest control methods using Integrated Pest Management (IPM).

Follow Up

1. Distribute Handout 2, “Pest or Pal’ Bug List.”
2. Have the children work in groups to:
 - Identify the creatures that are insects. (six legs)
 - Identify the creatures that are arachnids. (eight legs)
 - Identify the creatures that are larval forms of insects. (maggots, caterpillars)



Unit 4 Lesson 1: A Pest by Any Other Name

3. Have the groups identify the creatures they think are pests, and discuss why. As a large group, make a master list. Assign each group _____ creatures to research (numbers will vary). Allow time to research each assigned pest. Complete the “Wanted” poster for each assigned pest, using Handout 3. Discuss IPM control methods (biological, mechanical, cultural, chemical), using the word cards.

Assessment

Evaluate the “Wanted” posters using the Assessment for an Illustration or Poster.

Follow Through

Visit a natural history museum to view collections of butterflies and other insects, or look through insect field guides to see the wide variety of insects and arachnids.

