CONTROLLING INSECTS Teaching Tips

LEARNING OBJECTIVES

Youth will be able to:

* Define physical, cultural, biological, and chemical control methods (the components of Integrated Pest Management).
* List examples of biological, cultural, physical, and chemical control methods that can be used in the garden.
* Learn that not all insects are harmful, and in fact, many are helpful in controlling other insects.
* Observe an insect pest and insect damage in the garden, identify the pest, and recommend some control methods for the pest.

HOW TO USE THE CONTROLLING INSECTS SCIENCE PAGE

If possible, show the youth a garden or house plant that has been damaged by insects and the insect pests that caused the damage. Allow youth to examine the insect pests and the damage they are causing. Ask: What would you do if you noticed that some of your plants were being eaten by insects? Allow some time for discussion, and list their ideas on a chalkboard or large sheet of paper. Explain that in the past, when people had a problem with insects, often the first thing they would do is pull out chemical pesticides. Pesticides seemed like the fastest and easiest solution to a pest problem. However, some chemicals kill many kinds of animals besides the pests. Some can seep into the soil and contaminate water supplies, lakes, and rivers. Many pesticides persist for a long time.

Now people are being encouraged to use Integrated Pest Management (IPM). IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical methods in a way that minimizes economic, health, and environmental risks. Many school systems are now requiring youth to learn about IPM. Explain to the youth that by using varied control methods, they are practicing IPM and can reduce use of pesticides.

Explain to youth that frequent monitoring is an important strategy for controlling insect pests. Plants should be checked often for the presence of insects or insect damage. If pests are observed, the next important step is to learn about them. Learn about their habitat, their life cycle, what they feed on, and how they behave. This information will help the youth decide what to do about the pests.

Allow some time for youth to identify and learn about the insect pest that you have brought in. Youth could work in groups, and use the internet as well as identification books and IPM fact sheets (see below) to find out about the insect pest and how to control it. Ask them to categorize each treatment method that they recommend as cultural, biological, physical, or chemical control. Have the different groups share their findings, and discuss and clarify any discrepant information. After they have completed this exercise, youth will be more prepared to carry out the Try This activity.

Integrated Pest Management Fact Sheets, which describe and illustrate insects and diseases that attack different vegetables, can be downloaded at: <http://www.nysipm.cornell.edu/factsheets/vegetables/index.html>

WORD SCRAMBLE

Answers: use resistant varieties, rotate crops, keep crops healthy, attract enemies, release predators, hand pick, use barriers, use pesticides

TRY THIS

Emphasize that insects can harm garden plants in many different ways. Chewing insects eat leaves, fruits, stems, and roots. Sucking insects remove sap and can inject into plants virus particles that can cause plant diseases. Symptoms can include ragged leaves, blotches on leaves, misshapen leaves and fruit, holes in fruits, wilting, and galls. Youth should keep in mind that some symptoms can also be caused by other factors such as lack of water, disease, or incorrect pH.

Allow youth time to observe a pest and the damage it is causing, to identify the pest, and to do research about the pest and how it can be controlled. Also allow time for them to prepare a presentation on their pest. Encourage them to think of creative ways to present their information, such as with photographs or a video, or with posters.

SPOTLIGHT ON RESEARCH

Research results were drawn from: Triltsch, H. 1997. Gut contents in field sampled adults of *Coccinella septempunctata* (Col.: Coccinellidae). Entomophaga 42(1/2): 125-131.

Ask: What is the relevance of this research? How could the research results be put to practical use? Based upon this research, do you think gardeners can adopt lady beetles as a biological control of aphids only during summer? (It is not possible to infer this just from this study. For example, the study looked at only one of 400 species of lady beetle. Other species may eat aphids during the entire growing season.)

Youth may be interested to learn that the use of lady beetles for controlling insect pests was one

Garden Mosaics is funded by the National Science Foundation Informal Science Education program, and by the College of Agriculture and Life Sciences at Cornell University.

of the first biological control methods used in the U.S. Many of the insect pests in the U.S. were accidentally introduced into the country. For example, many pests were brought in on imported crop plants. If their natural enemies did not arrive with them, then the pest insects could multiply quickly and cause a lot of damage on crops. Some of the most effective natural enemies of imported pests are those that coevolved with them in their native habitats. Therefore, some of the most dramatic successes in biological control have resulted from importing natural enemies.The first major successful example of this method occurred over 100 years ago, when a lady beetle from Australia was imported to control cottony cushion scale on citrus trees.

Garden Mosaics is funded by the National Science Foundation Informal Science Education program, and by the College of Agriculture and Life Sciences at Cornell University.