Biological Control and Beneficial Insects:

Too Much of a Good Thing?
Can there be too much of a good thing? The following map activity tells how the Asian ladybeetle was brought to the United States to do biological control. It was a success and reduced pests. Most people like ladybugs. But sometimes ladybugs can get in our houses in the fall, hibernate, then try to leave in the spring. Complete the activity and then discuss the Asian ladybeetle as a group.

Many times beneficial insects and other organisms like spiders are not thought of as 'good bugs' because they can also be pests in our houses. When you understand more about something you usually become more tolerant of it.

Do you think there is such a thing as a good bug or a bad bug?
Using the two maps and a globe, complete these tasks. Check them off as you complete each item on the list.

Some species of ladybugs are native to North America. Some, like the Asian ladybeetle, came from other continents.

Asia exports a lot of products to North America by shipping or flying them across the Pacific. Insects can ride along in packaging. Customs agents try to examine goods as they come into the country. It is a big job. Some insects have made it through Customs.

1. Use a globe and locate the name of the ocean between Asia and North America.

2. Label that ocean, and the continents of Asia and South America on the world map in your workbook.

3. Label Australia.

4. Locate North America and label the three countries that are on the continent.

Sometimes insects are brought into the country as biological control agents. Scientists think they can help by being predators of crop pests. Pests cause harm to food and ornamental crops. Sometimes using imported insects works well, and sometimes it doesn’t. If they do, it can reduce the amount of pesticides used.

5. Using the map of the contiguous US, locate your state and label it.

6. Asian ladybeetles were brought to California in 1916. Label California on your map.

7. How old would you be if you were born in 1916?
8. Using the distance scale on the map, circle the most likely distance 
between a city in New York and a city in California:
____ between 800 and 1000 miles
____ between 900 and 1000 kilometers
____ between 3200 and 4000 kilometers

Even though the Asian ladybeetle was introduced into the United 
States many times, it did not become well established here until 1988. In that year, entomologists collected more than 1000 adult 
Asian ladybeetles in Louisiana.

9. Color the state of Louisiana orange.

10. If entomologists collected a total of 1000 ladybeetles in 20 traps 
and there were the same number of ladybeetles in each trap, how 
many were found in each trap?

The Southeastern Fruit and Nut Tree Research Laboratory is in 
Byron, Georgia. It is well known for its pecan orchards. A major pest 
of pecans is the Pecan Aphid. From 1978-1981 a special effort was 
made to raise and release Asian ladybeetles for biological control.

11. If ladybugs were raised from March of 1978 through September 
of 1981, how many months were ladybugs raised and released?

The scientists were very successful. The farmers were happy and 
reported that aphid pest problems were declining. But homeowners 
complained that ladybeetles were a pest in their homes in winter.

12. Was introducing Asian ladybeetles a good idea?
For Teachers and Parents: These pages comprise an activity about the use of ladybeetles for biological control.

Pg 1 The Asian ladybeetle was imported into this country as a predator of peach aphids. It worked. Asian ladybeetles have a different over-wintering practice than native ladybeetles. In their native land, they overwinter in crevices of sheer rock faces of the mountainous countryside. Here in the North American habitat, they substitute the flat walls of our homes as a gathering place and often seek entrance inside for shelter. This action caused the Asian ladybeetle to be considered a pest. Students should discuss the pros and cons of this beneficial and come to their own conclusion.

Pg 2 Students will need access to labeled world and United States maps to locate:
The Pacific ocean
Australia
North America - Canada, United States, Mexico
their state
California
Louisiana

Pages 3 and 4 Encourage students to debate the pros and cons of releasing the Asian Ladybeetle.

PROS: Asian ladybeetles reduced the damage caused by the Peach Aphid
    Asian ladybeetles reduced the need for pesticides to fight the Peach Aphid

CONS: They compete and may out-compete for habitat with native ladybeetles like the
    ninespotted ladybeetle.
    They can become a pest on and inside homes in the fall when they gather

The fact is that Asian ladybeetles are well established in the US and, like them or not, they are now naturalized.
Biological control means:

A. using natural enemies of pests to reduce their numbers
B. using soap to keep your hands clean
C. using pesticides to reduce the numbers of pests

1. Which of these is NOT a step in the IPM process?
   
   A. learn to identify properly
   B. determine an action threshold
   C. reduce the numbers of beneficial insects

2. Ladybugs and Lacewings are _ _ _ _ _ _ _ _ _ of aphids.

3. A parasitoid is an insect that generally lays eggs on or in a pest. Usually a parasitoid is:
   ___smaller or ___larger than its host.

4. Natural enemies occur in the food chains of all ecosystems. Predators hunt and consume or destroy _ _ _ _.

5. Pathogens such as virus and bacteria can also make pests sick. Is this used as a form of biological control?
   ___yes ___no

6. The Asian ladybeetle was brought to this country to be biological control for peach aphids. It worked well, but now there are a lot of Asian ladybeetles around. What is your opinion? Was this a good idea or not? Explain.
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Pathogens such as virus and bacteria can also make pests sick. Is this used as a form of biological control?

- X yes ___ no

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