

Course	Agricultural Science II
Unit	Crop Science
Lesson	Controlling Crop Pests
Estimated Time	50 minutes

Student Outcome

The student will be able to describe methods of plant pest control.

Learning Objectives

1. Identify the types of pests which affect plant growth.
2. Describe the methods which are used to control weeds.
3. Describe the methods which are used to control insects.
4. Describe the methods which are used to control plant diseases.
5. Explain how pesticides can be handled and applied safely.
6. Explain how “integrated pest management” is used in agriculture.

Grade Level Expectations

SC/ME/1/B/09-11/c	SC/LO/3/D/09-11/b	SC/EC/3/C/09-11/a
SC/ST/1/B/09-11/a	SC/ST/1/C/09-11/a	SC/ST/3/B/09-11/a
SC/ST/3/B/09-11/b	SC/ST/3/B/09-11/c	SC/ST/3/D/09-11/a

Resources, Supplies & Equipment, and Supplemental Information

Resources

1. *Crop Science* (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 1992.
2. *Crop Science Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

Supplies & Equipment

- ☐ Flour infested with weevils

Supplemental Information

1. Internet Sites
 - ☐ Crops Publications. University of Missouri Extension. Accessed January 16, 2008, from <http://extension.missouri.edu/explore/agguides/crops/>.
 - ☐ How to Manage Pests. University of California Integrated Pest Management Online. Accessed January 18, 2008, from <http://www.ipm.ucdavis.edu/PMG/crops-agriculture.html>.
 - ☐ Insects and Diseases Publications: Livestock and Crops. University of Missouri Extension. Accessed January 18, 2008, from <http://extension.missouri.edu/explore/agguides/pests/#Livestock>.
 - ☐ Missouri Pest Management Guide: Corn, Grain Sorghum, Soybean, Winter Wheat, 2008. University of Missouri Extension. Accessed January 16, 2008, from <http://extension.missouri.edu/explore/manuals/m00171.htm>.

-
- ❑ The Bulletin: Pest Management and Crop Development Information for Illinois. University of Illinois Extension. Accessed January 18, 2008, from <http://www.ipm.uiuc.edu/bulletin/>.
 - ❑ Weed ID Guide. Weed Science Program, College of Agriculture, Food and Natural Resources, University of Missouri. Accessed January 18, 2008, from <http://weedid.missouri.edu/>.
-

Interest Approach

Locate some flour that is infested with weevils. Have the class inspect the flour. Ask them if they would like to eat cake or bread made from this flour. Point out the weevils and describe the problem of crop insects in the U.S.

Communicate the Learning Objectives

1. Identify the types of pests which affect plant growth.
2. Describe the methods which are used to control weeds.
3. Describe the methods which are used to control insects.
4. Describe the methods which are used to control plant diseases.
5. Explain how pesticides can be handled and applied safely.
6. Explain how "integrated pest management" is used in agriculture.

Instructor Directions	Content Outline
Objective 1 <i>Crop producers must continually work to control plant pests. Damage to crops from pests is a major problem in the U.S. Many developing countries have very low levels of production due to competition from plant pests.</i>	Identify the types of pests which affect plant growth. <ol style="list-style-type: none">1. Weeds2. Insects3. Plant diseases
Objective 2 <i>Weeds cause considerable damage and loss to crops annually. Crop growth can be hindered because of weeds. Crop quality can also be reduced by weed seeds in the crop at harvest.</i>	Describe the methods which are used to control weeds. <ol style="list-style-type: none">1. Hand2. Mechanical cultivation3. Chemical methods4. Biological methods
Objective 3 <i>Insects continue to challenge crop producers and scientists to find new ways to control them and the damage they cause.</i>	Describe the methods which are used to control insects. <ol style="list-style-type: none">1. Genetic2. Cultural3. Biological4. Chemical
Objective 4 <i>Prevention of plant diseases is preferable to trying to cure it after it has begun.</i>	Describe the methods which are used to control plant diseases. <ol style="list-style-type: none">1. Genetic (disease-resistant varieties)2. Cultural (crop rotation, cultivation methods)3. Chemical (fungicides, etc.)4. Isolation (quarantine stations, etc.)

Instructor Directions	Content Outline
<p>Objective 5</p> <p><i>In 1988, over 820 million pounds of pesticides were used at a cost of over six billion dollars in the U.S. Pesticides are toxic to crop pests, but may also be hazardous to humans and other animals. Pesticides should be handled and applied safely.</i></p>	<p>Explain how pesticides can be handled and applied safely.</p> <ol style="list-style-type: none"> 1. Be properly trained in pesticide application 2. Read and follow pesticide label directions 3. Understand the toxicity ratings, signal words, and symbols 4. Wear protective clothing and use protective equipment 5. Provide proper storage
<p>Objective 6</p> <p><i>Pest management is a concern of every crop producer. A great deal of research has gone into developing methods of pest control. Concern for the environment and the effects of chemicals on food products have prompted producers and researchers to work at developing different strategies to control crop pests. IPM (integrated pest management) is one of those strategies.</i></p>	<p>Explain how “integrated pest management” is used in agriculture.</p> <p>Integrated pest management (IPM) uses multiple techniques of pest control once economic thresholds have been established.</p>
<p>Application</p>	<p>Other activities</p> <ol style="list-style-type: none"> 1. Have students compile a list of pesticides they have at home and record the label information. 2. Have a commercial pesticide applicator speak to the class on safety procedures. 3. Have students select a crop pest from a teacher-generated list and research the pest’s life cycle, crops affected, control methods, etc. 4. Collect and mount specimens of crop pests (e.g., weeds and insects), which can be used for future study and reference.
<p>Closure/Summary</p>	<p>Preventing crop pests is more efficient than trying to get rid of them after they become a problem. Methods used to control crop pests include the safe use of pesticides, good cultural practices, and the incorporation of integrated pest management strategies.</p>

Instructor Directions	Content Outline
Evaluation: Quiz	Answers: 1. False 2. True 3. False 4. False 5. True 6. True 7. d 8. c 9. a 10. b