



Virginia Cooperative Extension

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Using the Pest Management Guide



Megan Tierney

Extension Agent, Horticulture

York/ Poquoson



Overview

- Help Desk is Not Scary it is Easy- I don't know, but let me help you figure it out by getting some more information.
- Diagnosis- Narrow Down Suspects, Prepare a Good-Sample of the Problem, History of the Problem PMG -1-5 and 1-6
- VCE/PMG Updated Annually
- Three versions
 - Horticultural and Forest Crops
 - Field Crops
 - Home Grounds and Animals

Why?

- It is your Pest Management bible.
- If you recommend any control, chemical or otherwise, it must be in the PMG, esp. Home Grounds and Animals.
- You are legally required to give recommendations that align with the PMG
- We recommend active ingredients, not trade names with some exceptions
- Remember, you aren't alone

Where is it?

- Extension Office
- Online
 - <http://pubs.ext.vt.edu/456/456-018/456-018.html>
 - Or: Google “Home Grounds and Animals”
 - Or: Ext. website

What do you need?

Use the search below to search the site or find your local unit office.

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Agency 229 Report



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- » [Chesterfield financial planning classes pay off for local residents](#)
- » [4-H camps in Page County teach life \(changing\) lessons](#)

VSU College of Agriculture



Extension Events

7th National Small Farm Conference

- » Sept. 20 – 22, 2016
- » Virginia Beach Convention Center
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State Fair of Virginia

- » Sept. 23 – Oct. 2, 2016

Contact VCE

Virginia Cooperative Extension
101 Hutcheson Hall
Virginia Tech (0402)
250 Drillfield Drive
Blacksburg, VA 24061
540-231-5299
Fax: 540-231-4370

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Pest Management Guide: Home Grounds and Animals, 2016

456-018 (ENTO-166P)

Content Coordinators: Joyce G. Latimer, Professor, Department of Horticulture, Virginia Tech; David Close, State Master Gardener Coordinator, Department of Horticulture, Virginia Tech



The 2016 Pest Management Guides are available in PDF* format and are divided into three volumes: [Field Crops](#) (456-016), [Horticultural and Forest Crops](#) (456-017), and [Home Grounds and Animals](#) (456-018). Each of the volumes is further divided into chapters and/or sections.

Download the entire 2016 Home Grounds and Animals book, or choose just the section you need from the list at right.

Three-hole-punched and shrink-wrapped copies will be available for purchase at the [Pest Management Guide Store](#).

Commercial products are named in this publication for informational purposes only. Virginia Cooperative Extension does not endorse these products and does not intend discrimination against other products that also may be suitable.

*Please note: Accessing PDF files requires that you have the Adobe Acrobat Reader installed on your computer. You can obtain a free copy of the Reader from the [Adobe website](#).

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February 1, 2016

Available as:

>> [PDF \(8 MB\)](#)

Attachments:

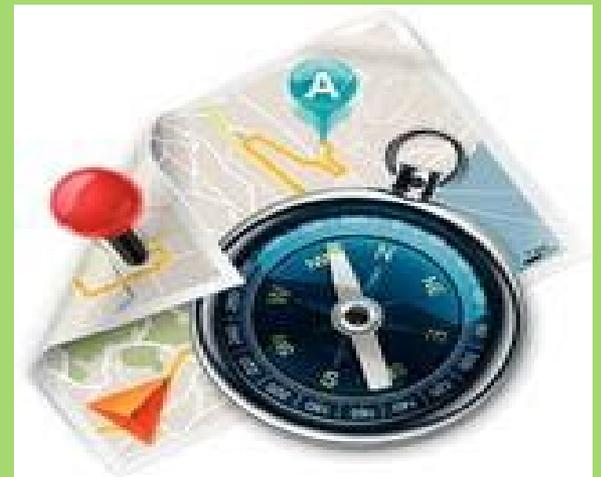
- >> [Regulations and Basic Information \(PDF | 3MB\)](#)
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- >> [Lawn \(PDF | 865KB\)](#)
- >> [Nuisance Insects of the House and Yard \(PDF | 486KB\)](#)
- >> [Pets \(PDF | 259KB\)](#)
- >> [Other Animals \(PDF | 498KB\)](#)
- >> [2016 Authors List \(PDF | 126KB\)](#)
- >> [Index \(PDF | 293KB\)](#)

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- >> [Fruits & Vegetables](#)
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Navigating the Guide



- Instead of pages being numbered 1-295, they are numbered by chapter
- 1-1 through 1-42 for chapter 1
- 2-1 through 2-22 for chapter 2
- When you find your pest, read remarks, there are important notes and non-chemical options
- Hold “Control Key- Ctrl” then hit “F” key for Find
- Organic options are italicized



Home Ornamentals: Insects of Trees, Shrubs, Annuals, and Perennials 4-35

Table 4.5 - Control Measures for Major Pests and Pest Groups

Pest	Pesticides Approved	Recommendations
Adelgids Spruce gall adelgid	Carbaryl Bifenthrin Paraffin oil Dormant oil	<p>Timing of pesticide treatment: Treat just before buds break in the spring, and/or in September and early October after galls have opened. Use Dormant oil in late March.</p> <p>Remarks: Spring treatments should be applied before cottony egg masses are evident on buds. Cooley spruce gall adelgid on Douglas fir does not produce galls; it feeds openly on the needles. Sprays can be applied in September and October.</p> <p>Biological controls: Brown lacewings</p> <p>Cultural control: Remove and destroy galls when green, moist and growing. Avoid growing Douglas firs and spruce together. Plant resistant or tolerant varieties of Douglas firs. Green needled plants are generally more resistant than blue.</p> <p>Related fact sheet: https://pubs.ext.vt.edu/ENTO/ENTO-146/ENTO-146.html</p>
Pine bark adelgid	Paraffin oil Dormant oil	<p>Timing of pesticide treatment: Treat in late April or early May and repeat 2-3 weeks later.</p> <p>Remarks: Use a forceful spray to penetrate cottony secretions and wash aphids from twigs and bark. Use less-toxic materials in public areas and around homes.</p> <p>Biological controls: Larvae of lady beetles, lacewings, and hoverflies</p> <p>Cultural control: General overall health. Avoid fertilizing plants too much. Extra nutrients encourage bug growth.</p> <p>Related fact sheet: https://pubs.ext.vt.edu/2907/2907-1402/2907-1402.html</p>
Hemlock woolly adelgid	Imidacloprid dinotefuran Dormant oil Potassium laurate Thiamethoxam see table 4.6	<p>Timing of pesticide treatment: Treat anytime with Dormant oil although early November is best. Treat with Imidacloprid in April or May as a soil drench. For imidacloprid, see "Bee Advisory Box"</p> <p>Remarks: The best compounds are horticultural oils which smother the insects. A 1% solution is recommended from May through September, and a 2% solution from October to April. Thoroughly wet entire plant including the bark of branches and the trunk. Use a forceful spray; be sure the new growth is thoroughly wet. Dormant oil is also called horticultural oil.</p> <p>Biological controls: Black lady beetle, Chinese lady beetles, Tooth-necked fungus beetle</p> <p>Cultural control: Discourage animal visits; monitor plant material movement from around it; clean vehicles, clothes, etc; selectively remove heavily infested trees. Don't stress the plant. Prune dead limbs; don't fertilize infested trees; use a stream of water to dislodge eggs and crawlers between April and June. Plant resistant species.</p> <p>Related fact sheet: https://pubs.ext.vt.edu/3006/3006-1451/3006-1451.html</p>
Hickory leaf-stem gall aphid	Carbaryl	<p>Timing of pesticide treatment: Treat just as new buds are beginning to open. Timing is critical.</p> <p>Biological controls: Because aphids begin feeding immediately as leaf buds begin to open, control is very difficult and often ineffective. A minor pest of older well established</p>

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THE NEW EPA BEE ADVISORY BOX On EPA's new and strengthened pesticide label to protect pollinators

PROTECTION OF POLLINATORS



APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. FOLLOW APPLICATION RESTRICTIONS FOUND IN THE DIRECTIONS FOR USE TO PROTECT POLLINATORS.



Look for the bee hazard icon in the Directions for Use for each application site for specific use restrictions and instructions to protect bees and other insect pollinators.

This product can kill bees and other insect pollinators. Bees and other insect pollinators will forage on plants when they flower, shed pollen, or produce nectar.

Bees and other insect pollinators can be exposed to this pesticide from:

- Direct contact during foliar applications, or contact with residues on plant surfaces after foliar applications
- Ingestion of residues in nectar and pollen when the pesticide is applied as a seed treatment, soil, tree injection, as well as foliar applications.

When Using This Product Take Steps To:

- Minimize exposure of this product to bees and other insect pollinators when they are foraging on pollinator attractive plants around the application site.
- Minimize drift of this product on to beehives or to off-site pollinator attractive habitat. of this product onto beehives can result in bee kills.

Information on protecting bees and other insect pollinators may be found at the Pesticide Environmental Stewardship website at:
<http://pesticidestewardship.org/pollinatorprotection/Pages/default.aspx>

Pesticide incidents (for example, bee kills) should immediately be reported to the state/tribal lead agency. For contact information for your state/tribe, go to: www.aapco.org. Pesticide incidents can also be reported to the National Pesticide Information Center at: www.npic.orst.edu or directly to EPA at: beekill@epa.gov

Drift

Alerts users to separate restrictions on the label. These prohibit certain pesticide use when bees are present.



The new bee icon helps signal the pesticide's potential hazard to bees.

Makes clear that pesticide products can kill bees and pollinators.

Bees are often present and foraging when plants and trees flower. EPA's new label makes it clear that pesticides cannot be applied until all petals have fallen.

Warns users that direct contact and ingestion could harm pollinators. EPA is working with beekeepers, growers, pesticide companies, and others to advance pesticide management practices.

Highlights the importance of avoiding drift. Sometimes, wind can cause pesticides to drift to new areas and can cause bee kills.

The science says that there are many causes for a decline in pollinator health, including pesticide exposure. EPA's new label will help protect pollinators.



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Table 4.5 - Control Measures for Major Pests and Pest Groups

Pest	Control	Timing of Treatment	Remarks	Biological Controls	Cultural Control
Adelgids spruce gall adelgid	Carbaryl Bifenthrin <i>Paraffin oil</i>	Treat just before buds break in the spring, and/or in September and early October after galls have opened. Use Dormant oil in late March.	Spring treatments should be applied before cottony egg masses are evident on buds. Cooley spruce gall adelgid on Douglas fir does not produce galls; it feeds openly on the needles. Sprays can be applied in September and October.	Brown lacewings	Remove and destroy galls when green, moist and growing. Avoid growing Douglas firs and spruce together. Plant resistant or tolerant varieties of Douglas firs. Green needled plants are generally more resistant than blue.
pine bark adelgid	Acephate <i>Paraffin oil</i>	Treat in late April or early May and repeat 2-3 weeks later.	Use a forceful spray to penetrate cottony secretions and wash aphids from twigs and bark. Use less-toxic materials in public areas and around homes.	Larvae of Lady beetles, lacewings, and hoverflies	General overall health. Avoid fertilizing plants too much. Extra nutrients encourage adelgid growth.
hemlock woolly adelgid	Imidacloprid Thiamethoxam <i>Mineral oil</i> <i>Potassium laurate</i> Lambda-Cyhalothrin & Thiamethoxam	Treat anytime with Dormant oil although early November is best. Treat with Imidacloprid in April or May as a soil drench.	The best compounds are horticultural oils which smother the insects. A 1% solution is recommended from May through September, and a 2% solution from October to April. Thoroughly wet entire plant including the bark of branches and the trunk. Use a forceful spray; be sure the new growth is thoroughly wet. Dormant oil is also called horticultural oil.	Biological control insects not available commercially yet.	Selective removal of heavily infested trees. Don't stress the plant, pruning dead limbs. Don't fertilize infested trees. Use a stream of water to dislodge eggs and crawlers between April and June. Plant resistant species.
hickory leaf- stem gall aphid	Sevin	Treat just as new buds are beginning to open. Timing is critical.	Because aphids begin feeding immediately as leaf buds begin to		Prune out galls while still green. Rake up and destroy fallen



Organic Control sections



Organic Controls for Insects

Eric R. Day, Extension Entomologist, Virginia Tech

Table 2.1 - Organic Products and Predators

Product ¹	Insects Controlled	Remarks
Azadirachtin	Beetles, Aphids, Caterpillars, Others	Various Trade names
<i>Bacillus thuringiensis</i>	Most caterpillars, loopers, hornworms, bagworms	This product, also known as <i>Bt</i> , is sold under many trade names.
<i>Beauveria bassiana</i>	Beetles, Aphids, Others	Various Trade names
Foil, M-One, M-Track, Novodor	Colorado potato beetle	Two strains of <i>Bt</i> will control potato beetles: <i>Bacillus thuringiensis</i> ssp. <i>san diego</i> is genetically engineered and therefore is not allowed in certified organic production. On the other hand, <i>B. thuringiensis</i> ssp. <i>tenebrionis</i> , a form of <i>Bt</i> that is not genetically engineered, can be used by organic producers.
Hot Pepper Wax	Aphids, mites, thrips	See label for precautions.
Insecticidal soap	Works well on soft bodied insects, in particular aphids, mites, mealybugs	This product is sold under many trade names and is a fatty acid soap.
Kaolin clay	Beetles, Aphids, Caterpillars, Others	Various Trade names
Neem	Broad spectrum	See label for precautions.
Pyrethrin	Broad spectrum; works on a wide variety of insects	Usually sold mixed with other botanical insecticides such as rotenone.
Pyrethrum/Diatomaceous Earth	Whiteflies, fireants	See label for precautions.
Spinosad	Caterpillars, beetles	See label for precautions.

¹Botanical insecticides are derived from various plant parts and are commonly used in organic control situations. It is important to read the label and follow all precautions regarding protective clothing, mixing, and labeled plants. Just because they are derived from plants doesn't mean that safety can be disregarded. Biological control is in two major forms. Microbial, which is a formulation containing a microorganism such as *Bacillus thuringiensis*, or the other form, which involves the release of predatory insects or mites, such as lady beetles. Use caution with insecticides when a release of predators is planned.

Vegetables

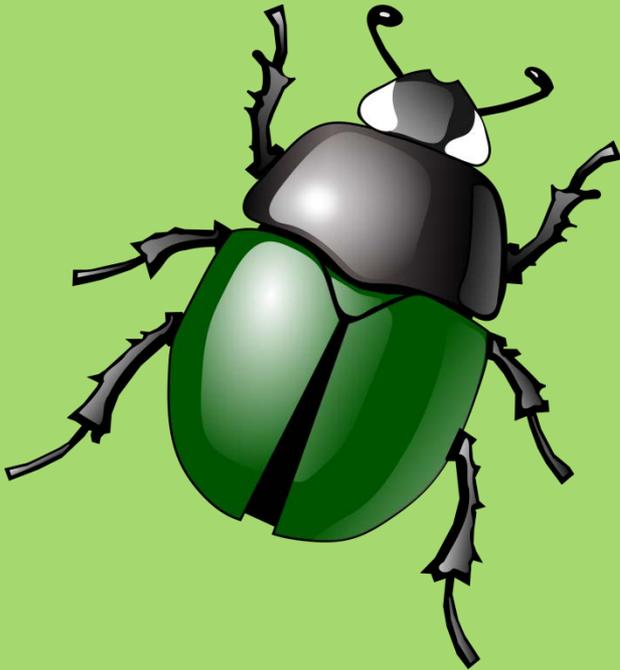
Chapter 2



Insects

2-9

- Split by crop and each pest
- A few “dissertations” specific insects



Diseases

2-2

- Split
 - General controls/ cultural/ mechanical
 - Crop/ disease management
- Potatoes= Irish Potatoes





Fruit

Chapter 3

Disease and Insect

3-1

- Emphasizes cultural control
- General discussion of fungicides and insecticides
- Provides a spray calendar for each crop (3-11 for apple)

Weeds

3-24

- Cultural controls emphasized
- Gives post emergent herbicide rec. for specific weeds
- Also spray calendar
- Drift!!!!



Ornamentals

Chapter 4



Diseases

4-1

- Grouped 1st by host species
 - Great to help diagnosis
 - What problems does this plant have?
- Gives fungicide recommendations by disease
- Special section on disease in trees 4-11
 - Most homeowners will need to consult with an arborist

Insects

4-27

- Again, organized by host species
- Gives timings for relevant insects
- General controls for other insects
- Probably the longest section
- Includes sections on Organic Controls and Houseplants

4-73

4-74

Weeds

4-79

- Gives general controls
- List of herbicides OK to use with specific ornamentals and to control specific weeds
 - Read label for additional considerations

Table 4.12 - Guide for Herbicide Selection - Annual and Perennial Flowers, Vines, and Groundcovers¹

	Acclaim	Barricade	Freehand	Ornamec	Gallery	Pendulum 2G	Pennant	Segment	Surflan	Treflan
Annual and Perennial Flowers										
Alyssum	-	-	-	-	-	F	F	F	-	F
Aster	-	F	-	-	-	F	F	-	-	F
Begonia	F	-	-	-	-	F	-	F	-	-
Chrysanthemum	F	-	-	-	-	F	F	F	F	F
Coleus	F	-	-	-	-	-	-	F	-	-
Daffodil	-	F	F	-	-	F	F	-	F	F
Dahlia	-	-	-	-	-	F	-	-	-	F
Daylily	F	F	F	F	-	F	F	F	-	-
Delphinium	-	-	-	-	-	-	F	-	-	-
Ferns	-	-	-	-	-	F	-	-	-	-
Forget-me-not	F	-	-	-	-	-	-	-	-	F
Four-o'clock	-	-	-	-	-	-	-	-	-	F
Geranium	F	-	-	-	-	-	F	F	F	-
Gladiolus	F	F	F	-	-	F	F	F	F	F
Hosta	F	F	F	F	F	F	F	F	-	-
Impatiens	-	-	-	-	-	F	-	F	F	F
Iris	F	F	F	-	-	F	F	F	F	F
Lily	-	F	-	-	-	F	F	-	-	-
Marigold	-	-	F	F	-	F	F	F	F	F
Nasturtium	-	-	-	-	-	-	-	-	-	F
Pansy	-	-	-	-	-	F	-	F	F	-
Peony	F	-	-	-	-	F	-	-	-	-
Periwinkle	F	-	F	-	-	F	-	F	-	-
Petunia	F	-	F	-	-	F	F	F	-	F
Phlox	F	-	F	-	-	F	F	-	-	F
Salvia	-	-	F	-	-	F	-	F	-	F
Shasta daisy	F	-	F	F	-	F	-	F	-	F
Snapdragon	F	-	-	-	-	F	F	F	-	F
Sunflower	-	-	F	-	-	F	-	-	-	F
Sweetpea	-	-	-	-	-	-	-	-	-	F
Sweet William	F	-	-	F	-	F	F	F	-	F
Tulip	-	F	-	-	-	F	F	-	F	F
Zinnia	F	-	F	F	-	F	F	F	F	F
Vines and Groundcovers										
Ajuga	F	-	-	-	-	F	F	-	-	-
Bamboo	-	-	-	-	-	-	-	-	-	-
Clematis	-	-	-	-	-	-	-	-	-	-
English ivy	F	F	-	F	F	F	F	F	F	F

¹This table should be used only as a guide. An 'F' indicates the herbicide is registered for use on that species when field-grown or planted in landscapes. Check the herbicide label for special considerations such as variety, plant growth stage, rate adjustment, or application precautions prior to application.

Lawns

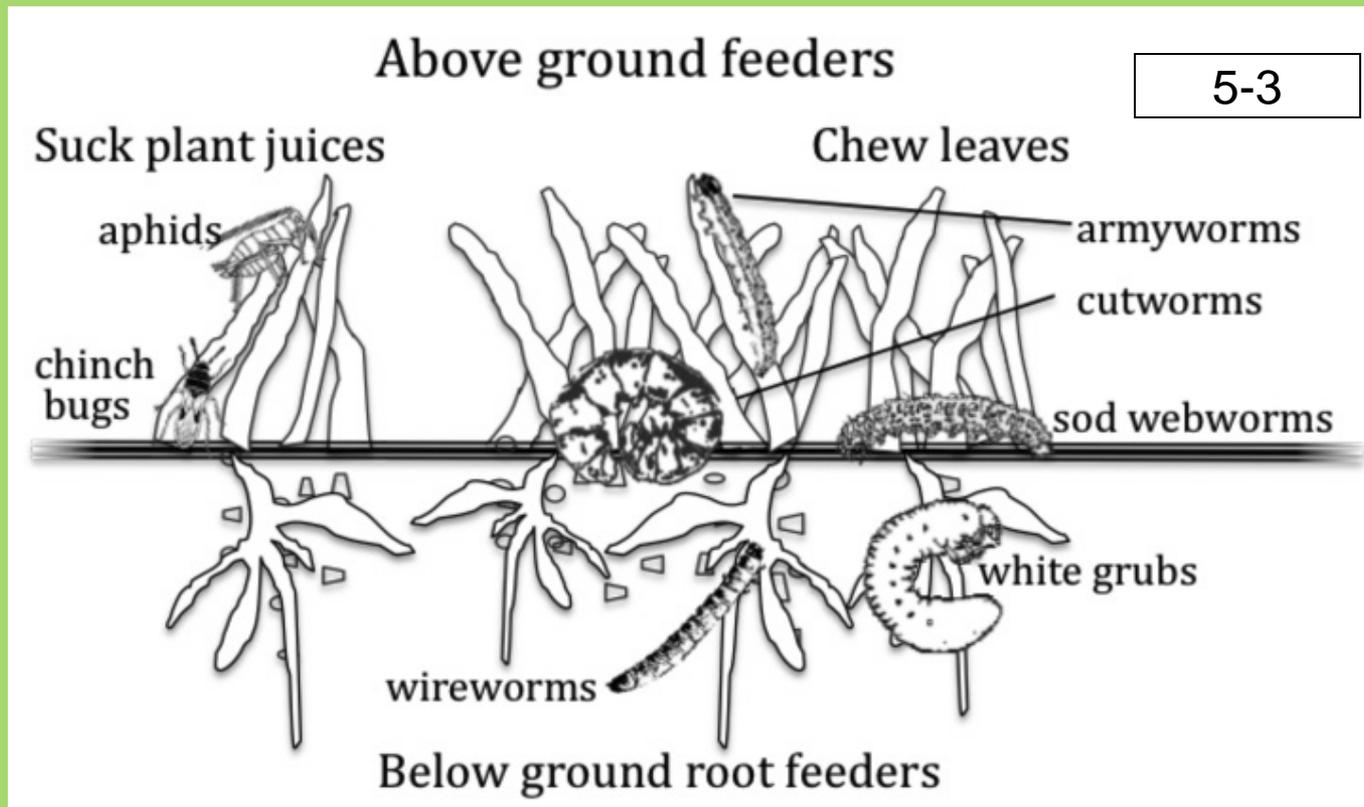
Chapter 5



Diseases

5-1

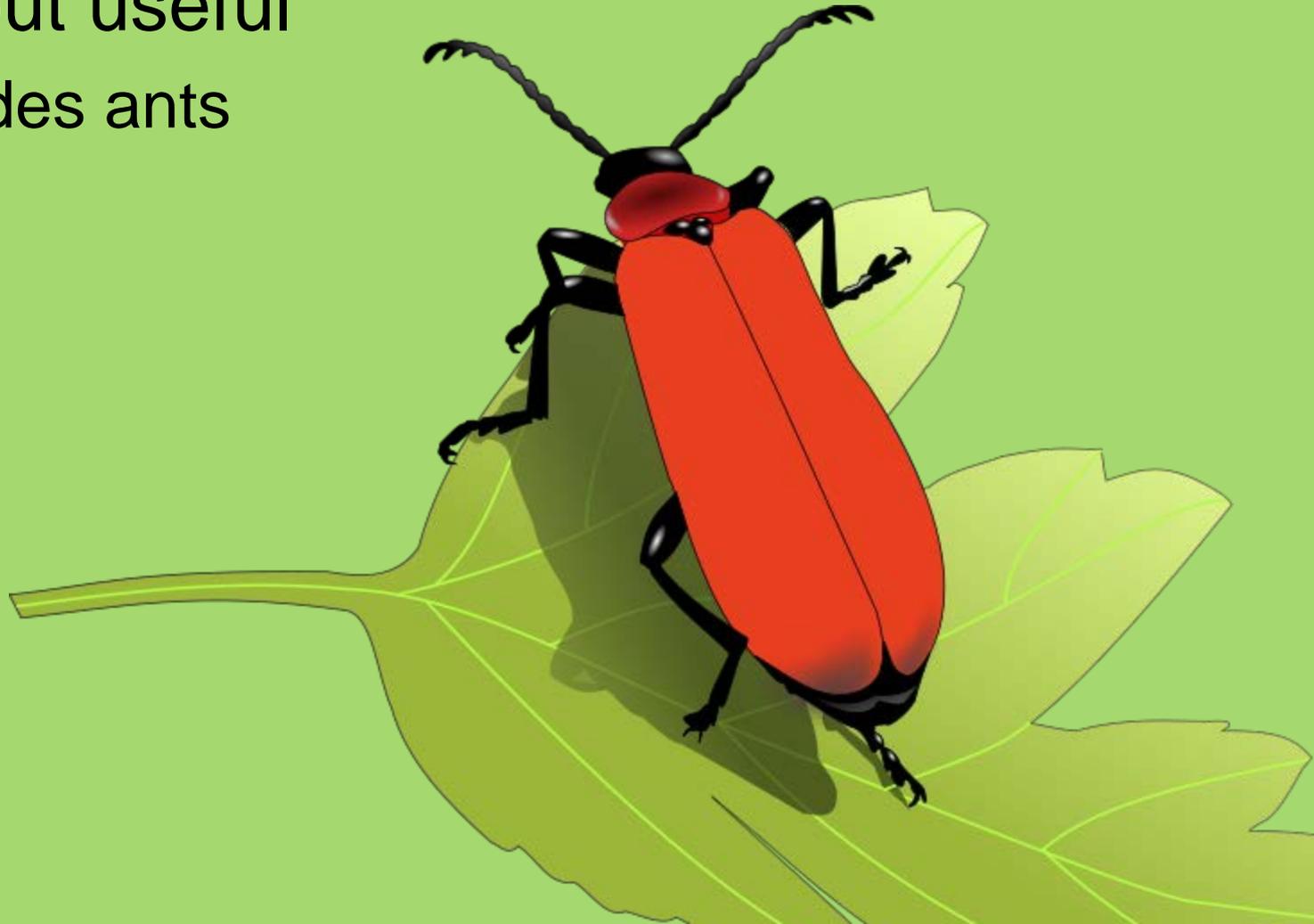
- Discusses Active Ingredients and what it works against 5-2



Insects

5-5

- Brief, but useful
 - Includes ants



Weeds

5-8

- Cultural controls
- Organic controls
 - Not always effective
- List of common AI's and their use 5-11-12
- Discussion of pre and post control



Nuisance Insects

Chapter 6



Includes

- Recreation areas
- Wood destroying insects
- Indoor pests
 - “How to kill everything”



Other chapters

- Dog and Cat External Parasites
 - “Call the Vet”
- Other Animals: Vertebrates as Pests
 - Not PETA friendly
 - DGIF 1-855-571-9003 9am-4pm M-F
 - Deer planting lists



Process

- Try to know plant
- Get positive ID on problem
- Check PMG index
- Google, look for more info from land grants
- Ask agent if you need to
- Recommend to client, offer assistance in interpreting label
- What if I don't like pesticides?





PMG Exercise

- 1. What are the infection conditions for Apple Scab?

Page 3-9: Extended Wet Periods 33-76F

- 2. What herbicides can be used for the groundcover Ajuga?

Page 4-77: Acclaim, Pendulum 2G, Pennant

- 3. A client has a crape myrtle with a damaging insect infestation. Can the PMG help you to narrow down what the possible problem could be? What are the possible problems?

Page 4-26: Aphid, scale insects and weevils

- 4. Is Malathion recommended for use against Mexican Bean Beetle in beans in the vegetable gardens? Can you legally spray Malathion despite the pest recommendation?

Page 2-9: No, not recommended. Yes, you can spray Malathion since it is recommended for other pests, as long as other label directions are followed.

- 5. What does the PMG recommend for slugs in the vegetable garden?

Page 2-15: Several options as outlined in PMG.

- 6. A client comes to you and has a deciduous azalea branch that shows signs of an azalea lace bug infestation. It is the end of October. Can you use Sevin (Carbaryl) for this pest? Is this the best time of year to control this pest? If not, why, and when would be a better time?

Page 4-46: Yes, you can use Sevin. No, since it is a deciduous azalea, you would want to treat in late May and repeat at 3 week intervals

- 7. A client loves their Bermuda lawn, but they have been fighting lespedeza unsuccessfully for three years. They have sprayed and sprayed, but just can't seem to gain any ground. You know this to be a "HARD TO KILL" weed. What are two active ingredients that you could recommend to combat this and other "HARD TO KILL" weeds?

Page 5-21: Use Index for lespedeza.
Heading "Hard to Kill" Triclopyr or
penoxsulam

