

Integrated Pest Management (IPM) for the Garden and Backyard Orchard



Shawn Steffan and Diane Alston

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Utah State University

Logan, UT 84322



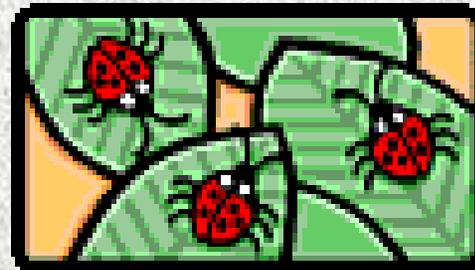
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Integrated Pest Management (IPM)

- The practice of using multiple techniques to manage pests (e.g., cultural, mechanical, biological and chemical controls) while minimizing negative impacts to the environment.



- Use of pest controls are based on a “real need” (thresholds)



- Economically viable

Integrated Pest Management Approach

- Proper diagnosis of problem
- Monitor to determine “real need”
- Identify “windows of opportunity”
- Determine “best management practices” for situation
- For the backyard gardener or orchardist, *best management practices* are often highly subjective.

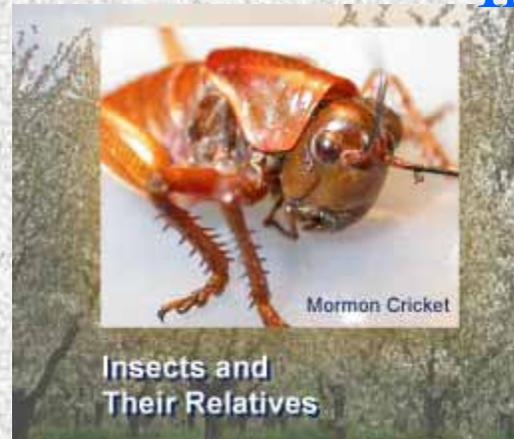


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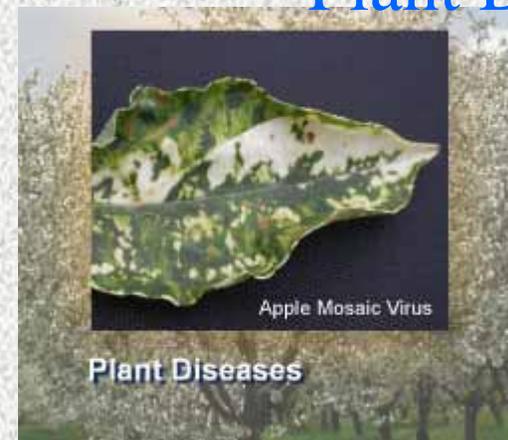
Integrated Pest Management



Insects and Their Relatives



Plant Diseases



<http://extension.usu.edu/cooperative/ipd/>

www.extension.usu.edu/cooperative/ipm

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Typically, an IPM approach integrates numerous control tactics, and treatments are made only when necessary. Treatment decisions are based on information derived from site-specific scouting, crop economics, elements of pest biology, agroecology, host-plant genetics, toxicology, and weather.

Clicking on the links in the left sidebar will provide specific information on managing tree fruit pests in Utah orchards.

Visit the [Utah Plant Diseases website](#) for a wealth of information on disease identification, prevention, and management.

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the Home Orchard Pest Management Guide

By Diane Alston, Sherman Thomson, Shawn Steffan, Scott Ockey, and Alan Roe

HG 137 Revised April 2004

www.extension.usu.edu/cooperative/ipd

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Insects and Plant Diseases



Mormon Cricket

**Insects and
Their Relatives**



Delta Trap

**Integrated Pest
Management**

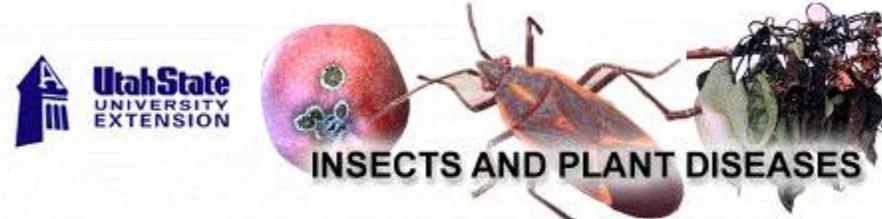


Apple Mosaic Virus

Plant Diseases

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Insects and Their Relatives

Fact Sheets From USU Extension Entomology and USU Integrated Pest Management

-  **Forage and Field Crops**
-  **Vegetables**
-  **Fruit Trees and Small Fruits**
-  **Ornamental Plants**
-  **Weed Control Using Insects**
-  **Biting, Stinging, and Health-Related**
-  **Nuisance, Stored Food, and Structural**
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Please direct comments, suggestions or questions regarding this website to Alan H. Roe at: alanu@ext.usu.edu

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Insects and Plant Diseases



Mormon Cricket

Insects and
Their Relatives



Delta Trap

Integrated Pest
Management



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Department of Biology Plant Pathology



-  General Plant Pathology
-  Non-pathogenic Disorders
-  Alfalfa & Grain Diseases
-  Fruit Diseases
-  Ornamental Diseases
-  Turf Diseases
-  Vegetable Diseases
-  Biological Control of Dyes Wood
-  Exotic Pest Monitoring Series

Welcome to the Utah State University plant disease site.

Effective disease control depends primarily on early, accurate identification of the disease and the causal agents. In most cases, it is too late to control a disease on a plant once the disease appears. However, timely control measures can prevent the disease from spreading to other plants.

You may contact us at:
USU Department of Biology
Plant Pathology
Logan, Utah 84322-5305
1-435-797-2515

[USU Ag Agent Intranet Link](#)

USU County Agriculture Agents click here to submit a plant disease sample to the USU Plant Pest Clinic.

[Submission Form](#)

Click here to for the submission form to submit a diseased plant sample to your local USU County Agriculture Agent.

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This website was built by the FACT Center and is maintained by Scott Dokey. Send comments and questions to scott@ed.usu.edu

www.ipm.ucdavis.edu/

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- About UC IPM
- 2003 annual report

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- Pesticide safety education
- Information systems
- Research
- Administration

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Western IPM Center
Western Plant Diagnostic Network
UC ANR: more topics

How to manage pests

Manage and identify insects, mites, diseases, nematodes, weeds

landscapes, gardens, and turf
homes, structures, people, and pets
agriculture and floriculture (*Pest Management Guidelines*)

Use tools to help make decisions

weather data and products
degree-days
interactive tools and models

Educational resources

Publications and other materials
Workshops and events
Educational programs
Pesticide safety, training, and use

Research and IPM

Grants programs
Results of funded projects
Research tools and databases: California pesticide use summaries

Statewide IPM Program, Agriculture and Natural Resources, University of California
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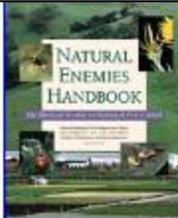
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[IPM in Practice: Principles and Methods of Integrated Pest Management](#)

This book, published in May 2001, is the first comprehensive, practical field guide ever developed for setting up and carrying out an IPM program in any type of crop or landscape. *IPM in Practice* will help pest management professionals apply the principles of IPM to the many different environments in which they work.

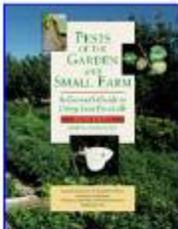
www.ipm.ucdavis.edu/IPMPROJECT/pubs.html



[Natural Enemies Handbook: The Illustrated Guide to Biological Pest Control](#)

This how-to book helps you: combine cultural, physical, and chemical methods with biological control; minimize pesticide impacts on natural enemies; release natural enemies and enhance their activity; and identify and use natural enemies to control pests in almost any agricultural crop, garden, and landscape. Virtually every insect, mite, and spider family important in biological control is illustrated with a taxonomically correct line drawing and color photos. The 180 high-quality color photographs and 140 line drawings feature hundreds of predators, parasites, and pathogens that attack pests. This book won an international award in June 1999 from the Agricultural Communicators in Education.

[Publ. 3396-H](#) (hardcover) 154 pp. \$40.00.
[Publ. 3396](#) (softcover) 154 pp. \$36.00. [Slide set.](#)



[Pests of the Garden and Small Farm: A Grower's Guide to Using Less Pesticide, 2nd edition](#)

This convenient handbook for home gardeners and small-scale farmers covers insects, mites, plant diseases, nematodes, and weeds of fruit and nut trees and vegetables. Ninety-five common pests are described in individual sections featuring biology, identification, and control. More than 250 color photos and 118 drawings help you diagnose problems. The IPM approach makes minimal use of broad-spectrum pesticides; recommended methods rely primarily on organically acceptable alternatives. Symptom identification tables organized by crop refer you to relevant pages.

[Publ. 3332](#), 286 pp. \$35.00. [Slide set.](#)



[Pests of Landscape Trees and Shrubs: An Integrated Pest Management Guide, 2nd edition](#) NEW

This completely revised book, the ultimate guide to managing landscape pests, is an indispensable resource for landscape professionals, pest managers, and home gardeners. This book will help you diagnose and manage hundreds of insects, mites, weeds, plant diseases, nematodes, and other plant-care problems that damage landscape trees and shrubs. The manual contains more than 430 high-quality, color photographs and 120 line drawings and tables in 500 information-packed pages. More than 100 University of California researchers, Cooperative Extension advisors and specialists contributed to this publication.

[Publ. 3359](#), 601 pp. \$42.00.

Tree Fruit Pest Identification and Monitoring Cards

Carry these pocket-size laminated cards in the field as handy references for identifying and monitoring major insect and mite pests and several important diseases in California deciduous tree fruits and nuts. Each pest is identified by a description and close-up photographs of important life stages. Cards identifying important natural enemies are also included. The information and 114 color photos on these 32 cards will help pest control advisors and growers know how and



Human Resources

- Your local Extension office.
- Utah State University personnel:
 - ✓ IPM Project: 435-797-0776
 - ✓ Diane Alston: 435-797-2516
 - ✓ PPDL: 435-797-2435
- Utah Dept. of Agric. and Food, statewide offices
- Staff at Retail Outlets



Proper Diagnosis



Insect is present



Injury is present



What type of injury?

Friend or Foe?

What life stage is present?

Consider the Variety of Abiotic Factors

- Most plant health problems are not caused by biotic factors (pests: insects, diseases), but by abiotic factors (irrigation, environment, culture & care)



Learn to Recognize the Good Guys

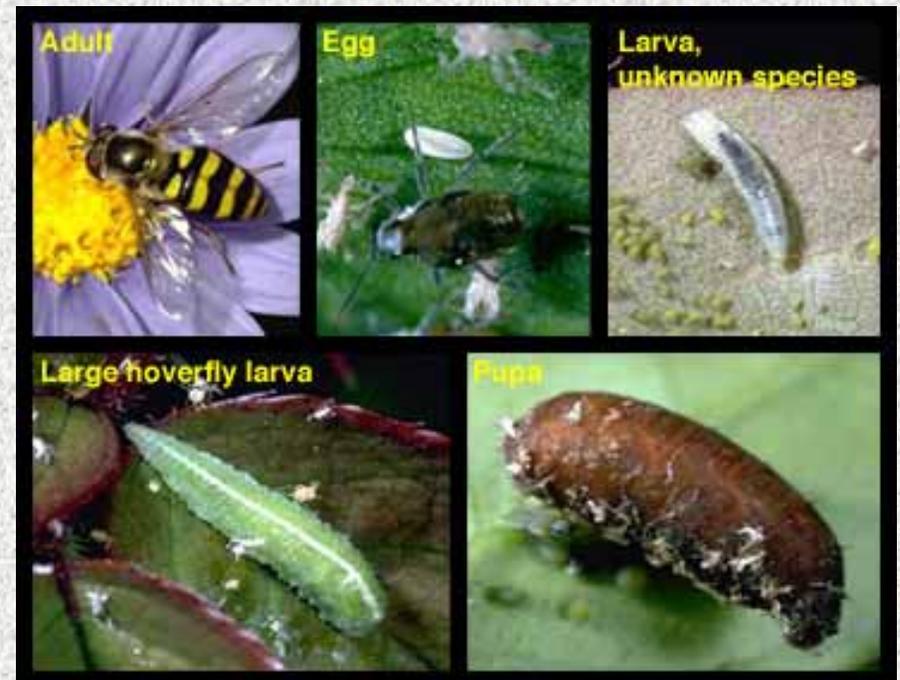
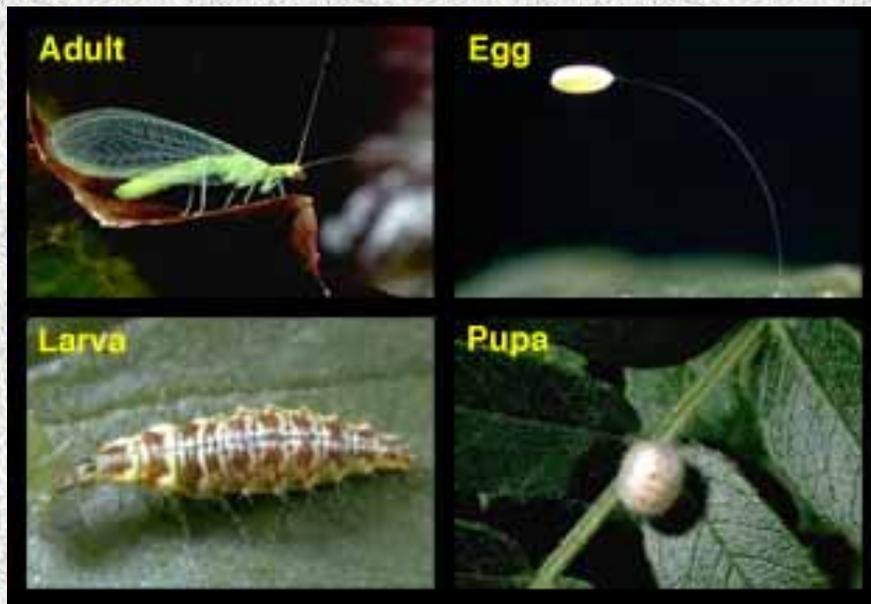


Aphid parasitoid emerging from aphid mummy.

Developmental Stages of the Convergent Lady Beetle



Predaceous Larvae/Neutral Adult (Lacewing and Hover fly)



Lacewing Larva Eating Corn Earworm Larva



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Developmental Stages of an Assassin Bug



Typical Predator Traits: Raptorial Forelegs and Pronounced Rostrum



Integrated Pest Management Approach

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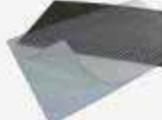


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**INSECT MONITORING SYSTEMS
FOR THE PROFESSIONAL
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Ready To Use Kits

TRECE WING TRAP KITS

Trece standard 3 station wing trap kits contain 3 traps, 3 extra liners, and 9 lures, all components you need to monitor a block up to 30 acres for the entire season. Single station kits contain 1 complete trap, 1 extra liner, and 1 lure. Any unused lures may be stored in freezer and used the following season. Field life of standard lures is 4-6 weeks for most insects. See Trece's pheromone list for lures available with the 3 station and single station kits. [Trece](#)

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SCENTRY WING TRAP KITS

Scentry's four station kits contain all the materials required to maintain 4 trap stations for a 12-18 week period under normal conditions and will monitor 40 acres or more. The 4 station kit contains 4 reusable (plastic top) wing traps, 8 extra bottoms, 12 pheromone lures. The 2-station kit contains 2 traps, 4 extra trap bottoms, and 6 lures. Field life average 4-6 weeks for most lures. See Scentry's pheromone list for lures available with the 4 station and 2 station kits. [Scentry](#)

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DELTA STYLE KITS

The delta style kit contains 12 traps and 12 lures. These kits are used for monitoring Nantucket Pine Tip Moth, Pine Pitch Moth, and Douglass Fir Tussock Moth.

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PEPPER WEEVIL KIT

Use traps to detect where migration is coming from, and to isolate "hot spots". Monitor 

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When presented with a threat,
what is the “best management practice?”



Spray?



Monitor?

Depends on tolerance of pest damage,
markets, costs of pest control...



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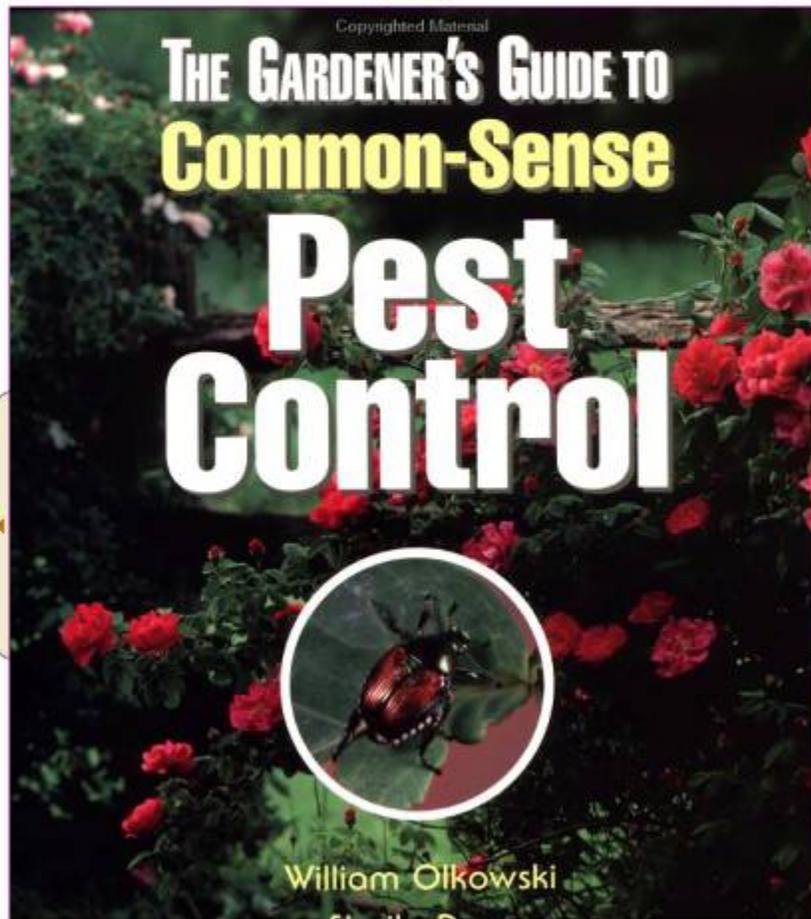


The Gardener's Guide to Common-Sense Pest Control by William Olkowski

Price: \$13.57 Add to Cart 32 used & new from \$7.95

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Apple Mosaic Virus

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Some Examples

- Web-spinning Spider Mites
- Stink bugs
- Cutworms, Green Fruitworms
- Earwigs

Spider Mites

- Monitor leaf injury
- Webbing
- Use thresholds that consider predator mite presence (see USU mite factsheets)
- Treat with water, insecticidal soap, or summer oil
- Continue monitoring



Stink Bugs

- Know what the eggs, nymphs, and adults look like.
- Destroy eggs asap
- Monitor for adults by slicing young fruit and re-visiting
- Recognize feeding damage



Green Fruitworms

- Recognize the damage.
- Beat-samples for larvae.
- Sprays of Bt if numbers are excessive.
- Bear in mind that damage is often just cosmetic.



Photo Courtesy: Sharon Steffan,
Utah State University Extension

Photo Courtesy: Sharon Steffan,
Utah State University Extension

Earwigs

- Row covers as preventative measures.
- Pitfall traps.
- Destroy nymphs and adults at night.
- Provide “earwig homes” and destroy the “tenants” each morning.



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