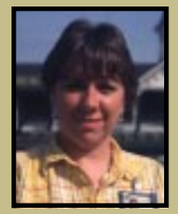
"A lot of our plantings are done in naturalistic settings where there is a wide variety of plant material. That way, a pest attack on any one plant is not so noticeable. We train our staff to recognize problems early, and have refresher courses every time a new disease or insect pest crops up. IPM is very cost-effective. Our chemical bill is next to nothing, especially with the help of beneficial insects. IPM is a common sense approach to pest management using high quality plant materials, planted in the right places and properly maintained."

Steve Foltz, Horticulturist
Cincinnati Zoo and Botanical Garden



"At Churchill Downs, we have to be concerned not only about the public, but also some million-dollar race horses. We have to be very careful about how we manage our pests to make sure the environment is safe for everyone. To me, IPM advocates the best management practices available to keep chemical usage to a minimum and to promote biodiversity and the environment. That's the aspect of IPM I like best—not having to rely heavily on chemicals to control pests in the landscapes and the greenhouses. For me, it's very workable."

Leslie Isaacs, Horticulturist
Churchill Downs, Louisville

"Because we're trying to maintain a lot of areas in the City of Owensboro with minimal help, host plant resistance is a major factor in selecting plant materials. We have over 90 flower beds that are maintained as seasonal displays and another 140 locations of landscape plantings, city buildings and parks. Our employees are familiar with identifying pests and they check flower bed locations weekly. We watch our methods of pest management, too, keeping in mind that on the weekends a park may be full of families having picnics or playing. I started learning about IPM several years ago and I like to think of it as a common sense approach for us."

Eddie Atherton, Supervisor of Landscapes
City of Owensboro, Kentucky

IPM Works!

IPM is successful because landscape managers at public areas are committed to using the safest, most effective and economical approach to pest management—the common sense choice.

IPM is not just for public landscapes. Use the IPM approach in your home landscaping by following these tips:

- *Purchase only healthy plants.*
- *Select plants that are pest-resistant and adapted to your climate.*
- *Properly plant and mulch trees and shrubs.*
- *Use a wide variety of species (biodiversity) in your plantings, even in your lawn.*
- *Rake up and destroy fallen leaves.*
- *Prune out dead and dying twigs and branches.*
- *Water plants once a week during dry spells.*

For More Information

Learn more about IPM on the World Wide Web. Following are some sites that have more information about IPM. Many of them have links to other useful sites.

http://www.uky.edu/Agriculture/IPM/ipm.htm
University of Kentucky IPM Site

http://www.ag.ohio-state.edu/~ohioline/
Ohio State University Extension Site

http://infobase.ca.uky.edu/expubs.htm
University of Kentucky, Cooperative Extension Service Publications

http://www.hcs.ohio-state.edu/hcs/hcs.html
Ohio State University, Horticulture & Crop Science in Virtual Perspective

http://www.hcs.ohio-state.edu/webgarden.html
Ohio State University WebGarden

http://www.uky.edu/Agriculture/Entomology/enthp.htm
University of Kentucky, Department of Entomology

http://www.reeusda.gov/nipmn/
National IPM Network

http://ipmwww.ncsu.edu/cipm/
National Science Foundation (NSF) Center for IPM

http://www.IPMnet.org/
Consortium for International Crop Protection (CICP), IPMnet

http://www.ent.iastate.edu/List/
Entomology Index of Internet Resources

http://www.ipm.ucdavis.edu/University of California
Statewide Integrated Pest Management Project

http://www.cdpr.ca.gov/docs/dprdocs/goodbug/benefic.htm
Suppliers of Beneficial Organisms in North America

For more information on how to use landscape IPM, contact your county Cooperative Extension Service Office.

Prepared by Monte P. Johnson, Extension Specialist, University of Kentucky, and Joe Boggs, Commercial Horticulture Agent, Ohio State University Extension.

Reviewed by Ric Bessin, Douglas Johnson, and John Hartman, University of Kentucky.

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INTEGRATED PEST MANAGEMENT

IPM for Public Landscapes

COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY
COLLEGE OF AGRICULTURE

Most of us enjoy walking through beautifully planted landscapes around public facilities. But have you ever thought about how landscape plant pests are controlled or managed? How do landscape managers of public areas keep pests at bay without drawing attention to their pest control activities?

One of the best methods to control pests is called Integrated Pest Management (IPM). IPM solves pest problems through the safest approach, using different pest management tools alone or in combination depending on the situation. It has been called the common sense approach to controlling pests.

A critical first step in any pest control action is determining if the target of your control activities will be an insect, a disease, or a weed. Once you know what type of pest you are dealing with you can decide how to manage your pest problem. By monitoring plants every so often you can find and correct problems before they get out of hand.

IPM tactics

Cultural control entails selecting the best plant for the chosen location and then properly caring for the plant once it's been planted. Healthy plants are more resistant to pest attack.

- *Use plants that are adapted to your climate and place them in appropriately shady or sunny locations.*
- *Plant in fertile, well-drained soil and mulch properly (in a doughnut shape, not piled next to base of plant).*
- *Care for plants during extremes in moisture and temperature.*
- *Remove infested parts or the pest itself from the plant.*
- *Rake up and destroy fallen, diseased leaves and twigs.*
- *Make use of biodiversity by planting a variety of species in your landscapes.*

Pruning out disease

Biological control makes use of beneficial organisms such as predators, parasites and disease-causing bacteria, viruses, fungi or nematodes to control pests.

- *Ladybird beetles, which feed on soft-bodied pests such as aphids, help keep those pests under control.*
- *Caterpillars and many other pests can be kept at bay by parasites such as small wasps and flies.*
- *Bacteria also help control caterpillars and several other pests. This is sometimes separately called microbial control.*

Lady beetle attacking aphids

Genetic control means using plants that have been selected or genetically manipulated to become resistant or less susceptible to pests. This is frequently called host plant resistance (HPR) and is considered by landscape managers as one of the most important tactics available to them. Some plants that can be used for genetic control are:

- *oriental dogwoods resistant to powdery mildew and anthracnose;*
- *crabapple varieties that are resistant to Japanese beetles and scab disease;*
- *species that are not hosts to Verticillium wilt or crown gall;*
- *some species of plants that simply have few pests.*

Japanese beetles

Mechanical or physical control methods involve using barriers or traps to prevent or reduce pest problems.

- *Use traps with baits to reduce or monitor pests such as the gypsy moth and dogwood borer.*
- *A more common physical control is the window screening we use to keep pests out of our homes.*

Pheromone traps

Government agencies can prevent or slow the spread of pests through quarantines, a method of inspecting plants and foods that are transported between states and countries. This same principle of **regulatory control** applies to all landscape managers and even homeowners. A good landscape manager will avoid introducing new pests into a landscape by inspecting plants before purchasing and planting. You should inspect plant materials for such pests as:

- *Japanese beetles (especially the grub stage that's in the soil with plants);*
- *red imported fire ants;*
- *gypsy moths (egg masses and caterpillars in particular).*

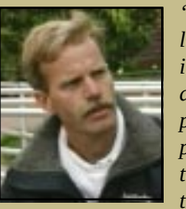
Gypsy moth caterpillar

Although this is sometimes the last tactic considered, **chemical control** may be the only way to quickly and effectively keep a particular pest in check. Remember to always read the label before purchasing and using a pesticide. Timing of pesticide applications is also very critical. Chemical controls include:

- *using an herbicide to wipe out dandelions in your lawn;*
- *insecticide to control scale insects or bagworms;*
- *fungicide to control powdery mildew on dogwoods.*

Spraying to control pests

IPM Successes



"To keep landscape plants looking good and healthy, it's important to use plants that are tough. You must choose plants that are resistant to pests and disease and that can take the environmental conditions that a public area can dish out. With plantings so close to guests and food stands in the area, we have to reduce pesticide applications. We train our employees in IPM methods so they can identify different pest problems and recognize beneficial insects. We have been able to reduce our pest management costs without reducing quality. I think that's what IPM is all about."

Tony Nold, President of Horticultural Design and Development
Former Landscape Supervisor
Kentucky Kingdom Amusement Park, Louisville, Kentucky

"Healthy and attractive plants make a good impression. And with over five million people coming through our gates annually, public safety and timing of pest management activities are critical. One of the best aspects of IPM is being able to use a safer chemical to achieve the same control of a pest. Everyone involved benefits—the applicator, the general public, and the environment. To cut down even further on chemicals, as we make replacements we choose plant materials that are less susceptible to insects and diseases. IPM is a real bonus for any facility."

Vickey Hypes, Landscape Manager
Kentucky State Fairgrounds and Exposition Center, Louisville