Introduction to Integrated Pest Management (IPM) (published 06-08-2024)
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There's probably not a better time of year for the home gardener than spring. The increase in temperature and moisture, the budding-out of trees, and the vibrant colors that explode from the colorless winter landscape are very uplifting. It is no surprise that this seasonal shift is a major factor in increased energy levels and activity of home gardeners.

Unfortunately, these same conditions create a noticeable up-tick in the pests that live in our gardens. While warmer and wetter springs offer opportunities for lush gardens, gardeners must be proactive in managing potential risks to ensure healthy and thriving plants. This is where the concept of Integrated Pest Management or IPM comes into play.

So, what is IPM? Integrated Pest Management (IPM) is a comprehensive approach to pest control that emphasizes sustainability, environmental responsibility, and minimal impact on human health. By focusing on pest prevention and least-toxic control techniques, IPM aims to manage pests effectively while reducing reliance on chemical pesticides.

One of the easiest ways to understand the concept of Integrated Pest Management is to dissect the term itself. "Integrated" refers to multiple items or processes combined into one approach. This combined approach is considered the most environmentally healthy and the most viable long-term strategy available. This also allows for more options from a variety of possible management strategies. The more options you have, the greater your chances for success.

Perdue University Entomology defines a pest as, "*any animal, plant, or other organism whose biology, behavior, or location places it in direct conflict with humans."* This is where things get gray rather quickly, as a pest can go from being a pest, to being a non-pest just based upon its geographic location.

A bat flying around at night and consuming flying insects doesn't bring a second thought. A bat flying around inside your bedroom changes the perception quickly. To further simplify, a pest can be considered as "any living thing that is where you don't want it to be". Identifying a pest and ensuring it is not a beneficial insect are key steps in IPM, as you need to know "what" you're trying to control before you can come up with the most appropriate methods to control it and avoid harming a helpful garden visitor.

"Management" refers to the steps that you'll use in controlling the pest you've identified, but it's also an excellent term in managing individual expectations. You will never remove all of the pests that are a threat to your garden. As long as you have plants exposed to nature, nature will provide a host of organisms interested in your plants. Nature constantly reminds us that IPM is an ongoing task.

The USDA defines IPM as "a sustainable approach to managing pests by combining biological, cultural, mechanical (physical), and chemical tools in a way that minimizes economic, health, and environmental risks". Each of these core principles of IPM has its own unique application, benefit, or use.

Cultural control involves modifying the environment or cultural practices to make it less favorable for pests to thrive. These are practices that reduce pest establishment, reproduction, dispersal, and survival. An example of this is adjusting planting dates to avoid pest infestations.

Mechanical (or physical) control kills a pest directly (non-chemical), blocks pests out, or makes the environment unsuitable for it. Examples of these are rodent traps (mechanical) and screen doors (physical).

Biological control is the use of natural enemies such as predators, parasites, pathogens, and competitors to control pests and their damage. An example of this is the use of *Bacillus thuringiensis* (B.t.) to control plant-eating larvae like tomato hornworms.

Chemical control is the use of pesticides, either organic or synthetic, to kill the pest.

So that's the 30,000-foot view of IPM. Over the next few weeks, we'll explore in more detail the various components of IPM and how to incorporate the entire toolbox of IPM methodologies into your backyard garden. Until next time, keep workin' th' dirt!

Resources

"What is a pest?,"
https://extension.entm.purdue.edu/radicalbugs/index.php?page=what_is_a_pest

"Implementing IPM Control Options,"
https://extension.entm.purdue.edu/radicalbugs/index.php?page=implementing_ipm_control

"What is Integrated Pest Management (IPM)?," https://ipm.ucanr.edu/what-is-ipm/#gsc.tab=0

"USDA Integrated Pest Management Initiative; Radliffe's IPM World Textbook,"
https://ipmworld.umn.edu/jacobsen-usda

"Biological control strategies in integrated pest management programs,"
https://lgpress.clemson.edu/publication/biological-control-strategies-in-integrated-pest-management-ipm-programs/

James F. Walgenbach. (2018). *Sustainable Management of Arthropod Pests of Tomato*. *Cultural Control*. Academic Press. https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/cultural-pest-control

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