

Smart Gardening: Integrated pest management in vegetable gardens

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What is IPM and why is it smart?

IPM stands for “integrated pest management.” It is a way to manage insects, diseases, weeds, animals and other “pests” that cause damage by combining biological, cultural, mechanical and chemical practices. It uses a series of steps to understand pests and decide the best methods of control. The principles of IPM can be applied to managing a lawn or landscape, pests in a home or producing food in a vegetable garden.

The goal of IPM is to reduce environmental, health and economic risks. By understanding that multiple methods can be used to manage a pest problem, it is possible to reduce or eliminate pesticide applications while still addressing garden problems. Smart gardeners use IPM to protect human health and the environment by making more environmentally-friendly pest management choices.

Are IPM and organic methods the same thing?

Not always. Organic food production is more restrictive, limiting use of pesticides and fertilizers to those produced from natural sources instead of allowing synthetic chemicals as some IPM strategies do. However, IPM can be used in every type of production and you can adopt an organic IPM management strategy.

Steps to following IPM

Identify pests and understand their lifecycles. Know your plants, the common pests that affect them and the damage they cause. Only a few insects are actually pests; many are beneficial or do no harm. Take time to identify beneficial insects and pollinators.

Understand that different life stages of pests do not look alike and that not all stages cause damage or



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Keeping pests away from cole crops, such as this kohlrabi, can be as simple as placing a row cover over for protection.

can be managed. By understanding their lifecycles, you learn the best timing for successful management strategies.

For help in identifying specific insects and diseases, call Michigan State University Extension’s toll-free Lawn & Garden Hotline at 1-888-678-3464, or send samples to [MSU Plant & Pest Diagnostics](#). For information on how to send samples and a list of available services and fees, visit www.pestid.msu.edu.

Prevent or limit damage. In general, pests are best managed by preventing them; many cannot be eliminated once they are established. Think about methods to keep them out, such as row covers in a vegetable garden.

Scout for pests. Check your garden regularly for insects and diseases and record what you find in a journal rather than rely on memory. Keep a magnifying glass or hand lens handy to see more detail for better identification. Use the information collected to help plan pest management the following year. Traps such as yellow sticky cards can be helpful in scouting. These can be placed just above the plant canopy and help detect some insects.

Bugwood.org: Larva - Frank Peairs, CO St U; pupa and adult - Russ Ottens, UofGA



Different life stages of a beneficial lady beetle: larva, pupa, adult.



Joy Landis, MSU IPM Program



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Clean tools and equipment after working with diseased plants.

Using straw as organic mulch will help manage weeds.

Be realistic with IPM. Once you have identified a problem, determine what options you have for managing it. Some pests are more damaging than others. Establish tolerances for pests and pest damage. Don't expect plants or vegetables to look picture perfect. Some insect damage can be tolerated and will still allow a good quality vegetable harvest.

Implement your control tactics. Select effective and environmentally-friendly methods, such as the examples below.

Evaluate. Record what worked and what didn't. Make adjustments accordingly.

How to implement IPM in your vegetable garden

Right plant, right site. Vegetables grow best in well-drained soils and full sun – a minimum of six hours a day, ideally eight to 10 hours. Get a soil test at homesoiltest.msu.edu to find out about soil pH, needed nutrients, organic matter content, soil type and to receive recommendations to improve the soil. Michigan State University Extension provides an easy-to-use soil test kit that can be purchased at the MSU Extension Bookstore (search E3154 at shop.msu.edu).

Start with healthy plants. Buy well-branched, stocky transplants with healthy leaves, sturdy stems and well-established root systems. Transplants need good root systems to quickly establish in the garden. Roots should be well formed, whitish and hold the

soil mass together. Avoid older, overgrown or pot-bound transplants with flowers or fruit, as this will limit yields. Reject plants with soft, brown or rotten roots. Select varieties with multiple disease and insect resistance or tolerance, if possible.

Employ environmentally-friendly pest management methods

Keep tools and equipment clean by using a solution of 10 percent chlorine bleach to disinfect tools after using them on diseased plants. Keep plantings clean by removing and destroying diseased plants or those that are severely infested with insects during the growing season.

Rotate the garden location and where you plant crops within the garden every few years if space is available. This will help avoid the buildup of plant diseases and insects.

Manage weeds by hand-pulling or cultivating the soil with a hoe; or apply organic mulches after the soil warms. If using pre-emergent herbicides, always follow label instructions to avoid damaging your garden plants. Plant cover crops after harvest.

Manage insects and mites by using insecticidal soaps and horticultural oils on soft-bodied insects and mites. Hand-pick larger insects such as potato beetles and tomato hornworms. Manage diseases by prevention rather than treatment. Select disease-resistant vegetable varieties and use proper plant spacing in order to allow good air circulation and drying of the foliage.

For more information on a wide variety of Smart Gardening topics, visit www.migarden.msu.edu or call MSU's Lawn and Garden hotline at 1-888-678-3464.

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