



INTEGRATED PEST MANAGEMENT

Integrated Pest Management or “IPM” is an effective and environmentally sensitive approach to pest management. It takes into account the life cycle of pests and how they interact with the environment. IPM is not a simple pest control method, but a series of pest management evaluations, decisions and controls.

IPM is a pest control strategy that uses complimentary methods of control: mechanical devices, physical devices, genetic, biological, cultural management, and chemical management. Its main purpose is to reduce or eliminate the use of pesticides.

IPM is a systematic approach to pest management. It focuses on prevention first. Implementing IPM involves: Monitoring pest populations, identifying pests, choosing a combination of strategies to keep pests under control. This might include cultural, mechanical, biological and chemical methods of pest control. IPM stresses using the least toxic method first.

Putting IPM to Work

Develop a Strategy

Be prepared to use multiple tactics to control pests. If you decide it is necessary to act, start with least invasive, least harmful method that is practical and effective. Chemical intervention should be your last resort. Remember that prevention is **always** the best method.

Set a Tolerance Level

How much damage are you willing to accept? Determine the acceptable level of damage you are willing to live with, both in terms of aesthetics and of plant health. Ask yourself some questions: What will happen if I don't take any action—will it get worse or might it go away? Will my garden produce less? Could the damage be permanent or fatal?

Can I accept a less-than-perfect garden in return for the benefits of decreased pesticide use? Are my plants particularly expensive or vulnerable? Will the destruction of beneficial insects counteract any benefit of taking action?

Identify the Pest (insect or disease)

Always rule out cultural factors first. Then, correctly identify the insect or disease according to its associated signs and symptoms. Knowing and identifying the pest's life cycle stage helps determine when control measures are most effective.

✓ Site Evaluation

- Know cold hardiness zone for your site. Use USDA Zone Map <http://planthardiness.ars.usda.gov/PHZMWeb/>
- Know your soil conditions: Drainage, pH, soil types, ie. sandy, clay, etc.
- Conditions of plants being put into landscape: Health of plant, condition of root system, signs of stress.
- Time the gardener (you?) will give to plantings
- Correct installation of plant material: Correct planting depth, spacing, watering, etc.

✓ Visual Inspection

- Make a visual inspection several times a week. Look carefully - check underside of leaves, and in canopy of plants.
- Because some insects only appear after dark, occasionally make rounds at night with a flashlight.
 - Look for missing leaves, damaged flowers, color of plant material, and texture.
 - Compare with other similar plants - what's normal?
 - Keep notes to compare current plants with plants from previous years.
 - Use hand lens, traps, etc.



✓ Cultural Controls

- Rotating crops
- Selecting new and pest resistant varieties
- Planting healthy, pest/disease free plants
- Right plant, right spot
- Consider neighboring plants, soil pH, drainage, moisture, exposure to wind/sun.
- Keep plants healthy - remove diseased plants.
- Control weeds.
- Eliminate hiding places, especially for slugs and snails.
- Keep tools clean - even consider disinfecting if necessary.
- Consider companion plants and inter-planting.
- Provide habitat for beneficial insects.

✓ Physical controls

- Hand pick pests
- Spray with water - including underside of leaf - may take several sprayings.

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- Pruning helps produce healthier plants. Evaluate pruning damage vs pest damage.
- Barriers - cages, collars, floating covers.
- Mulching
- Trapping - some trap insects - others traps are used to indicate problems.

✓ Biological controls

- Beneficial Insects - Encourage natural enemies of pests such predatory insects (lady bugs, praying mantids, lacewings, spiders, and others), parasitoids (wasps and flies), and also pollinators (bees, flies)
- Protecting beneficial insects: Choose least toxic spray, spot spray - don't spray blooms, spray in the early morning or later in the evening.
- Use plants that attract beneficial insects
- Other animals (birds, bats, snakes, frogs)

✓ Chemical controls

- Considerations: Use least harmful chemical to environment, least toxic to the applicator, most specific to pest, and least harmful to beneficials.
- Labels -*Read the label!* If you do use chemical pesticides, treat just where the pest is rather than treating the whole yard.
 - Caution = least toxic
 - Warning = more toxic
 - Dangerous = most toxic



Evaluate Results

Don't forget to evaluate the results of the strategy you chose. Monitor your garden carefully to see if you are satisfied. Record what you did and how well it worked, in both the long and short term.