

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 take action, 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

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.

✓ Visual Inspection

- Make a visual inspection several times a week. Look carefully – check underside of leaves, at night, and in canopy of plants.
- 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.



aphid



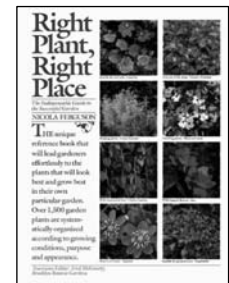
earwig



leafhopper

✓ Cultural Controls

- Rotating crops
- Selecting new and pest resistant varieties
- Planting pest free plants
- Tillage – kills some insects
- 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.

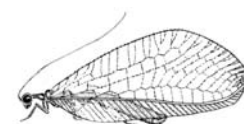


✓ Physical controls

- Hand pick pests
- Spray with water – including underside of leaf – may take several sprayings in a relative short time.
- Pruning – evaluate pruning damage vs pest damages. Pruning helps produce healthier plants.
- Barriers – cages, collars, floating covers.
- Mulching
- Rototilling – cultivate the soil
- Trapping – some trap insects – others traps are used to indicate problems.

✓ Biological controls

- Beneficial Insects – pollinators (bees, flies) predatory insects (lady bugs, praying mantids, lacewings and others), parasitoids (wasps and flies)
- Protecting beneficial insects: Choose least toxic spray, spot spray – don't spray blooms, spray in the early morning
- Use plants that attract beneficial insects
- Micro-organism B.t.
- Other animals (birds, bats, snakes, frogs)



lacewing

✓ **Chemical controls**

- Considerations – Use least harmful chemical to environment, least toxic to the applicator, most specific to pest, and least harmful to beneficials.
- Labels – Caution = least toxic; Warning = more toxic; Dangerous = most toxic. *Read the label!*
- Insecticidal soaps – kills by destroying their cuticle. Must make contact with insect. Can be harmful to some plant material.
- Horticultural oil – Kills pests by suffocation. Types – Dormant and Summer

✓ **Site Evaluation**

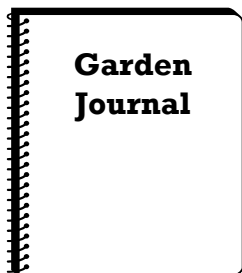
- Know cold hardiness zone for your site. Use USDA Zone Map.
 - Soil conditions: Drainage, Ph, types, ie. sandy, clay, etc.
 - Conditions of plants being put into landscape: Health of plant, condition of root system, signs of stress.
 - Time gardener will give to plantings
 - Correct installation of plant material: Correct planting depth, spacing, watering, etc.
- ✓ Encourage natural enemies of pests such as ladybugs, lacewings and spiders (beneficial insects).
- ✓ Use products that are less toxic and break down quickly (insecticidal soaps, horticultural oils, botanical insecticides).
- ✓ If you do use chemical pesticides, treat just where the pest is rather than treating the whole yard.

Monitor Regularly



Walk around your property on a routine basis and carefully inspect plants for symptoms of pest damage. Don't miss the undersides of leaves. Use a magnifying glass to get a closer look at tiny insects and spots on leaves. Because some insects only appear after dark, occasionally make rounds at night with a flashlight.

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.