

SIMPLE, HOLISTIC, COMMON SENSE METHOD OF MANGING GARDEN PESTS & DISEASES

Integrated Pest Management IPM

Integrated Pest Management is the best way to keep your plants healthy and protect the environment at the same time.

IPM uses a variety of control methods for plant problems, not just pesticides.

You can use less pesticide and still have a beautiful yard, if you use Integrated Pest Management.

To Use IPM: Overview

Excellent source for IPM information based on plant, crop, or pest: WSU Hortsense (E.g., search Google (e.g. for “WSU Hortsense apple”). That’s the easiest way. You can also go to the site: <http://hortsense.cahnrs.wsu.edu>

Step 1. Monitor your plants; Identify the cause of the problem. Positively identify the pest: insect, disease or weed.

Many plant problems are not caused by insects or diseases and NO pesticide should be applied. Stop unnecessary pesticide use

- Once you’ve identified the pest, ask yourself questions to identify the best control:
 - Where do they hide?
 - What time of day will they appear?
 - When are they most active?
 - What are their favorite food sources?
- Be on the lookout for the adult insects.
- Knowing their behavior will be your best guide to prevent their damage.

Step 2 Evaluate/ Determine Damage Threshold

- **How much damage are you willing to accept?**
- Remember that the garden doesn’t need to be perfect.
- Perfection is an unrealistic garden goal.
- When considering your damage threshold, ask questions like:
 - Is there enough foliage damaged to affect the plant’s energy production?
 - Would the flower or ornamental value be impacted?
 - Would you eat it with the damage on it?
 - Can the damage on the fruit be cut out?
 - Are you selling the crop?
 - What’s the cost-benefit to the control measure?

Step 3. Prevention- Use several methods to control plant pests.

- Select plants that have few problems and will grow well in the selected site.
- Reduce plant stress with proper watering, fertilization and pruning.

Step 4. Take Action-Implement Control Measures

- **Pesticides are used as part of an IPM strategy when appropriate.** Choose effective biocontrol products or least hazardous pesticides, if available. **REMEMBER**--using pesticides, even the “least toxic” option will also kill your garden allies--the beneficial insects that are working to keep the pests at bay for you.

Read and follow ALL label instructions!

Pest Management Options

Step 4. "Implement control measures" in IPM

Prevent Access: Use mechanical barriers- row covers on plants or mulch that may suppress weeds.

Manual control: Physically remove weeds with a hoe or insect pests by pinching them off. Aphids may be removed by a strong spray of water.

Repellent

- **Kaolin**-Applied as a spray to leaves, stems, and fruit, it acts as a repellent to some insect pests. Some formulations are OMRI-listed for organic use (E.g., Surround)
 - **Note:** *kaolin application can disrupt bee foraging; apply at night to minimize exposure to foraging bees.*

4. Organic treatment (In order of most benign to most severe)

- **Bt**
 - (E.g., DiPel, Bonide Thuricide BT Conc)
 - **Note:** *Little or no toxicity to bees, but will kill all butterfly/moth larvae, even desirable ones. Works best when caterpillars are small.*
- **Diatomaceous earth** - *If bees or beneficial insects are seen crawling on leaf or stem surfaces with recently applied DE, spray clean water to wash away the DE. Take care to avoid creating clouds of DE dust during application.*
- **Horticultural oils (Smothers--Needs complete coverage)**
- **Neem Oil**--Check active ingredients--No azadirachtin (**Contact-smothers, use like horticultural oil**)
- **Neem containing azadirachtin**
 - Azadirachtin (Derived from neem tree but is not neem oil) (**Repellent and insecticide—apply at night-insect must ingest**)
 - E.g., Safer Brand BioNEEM Multi-Purpose Insecticide & Repellent Conc [Organic]
- **Insecticidal Soap**
 - **Contact spray-needs complete coverage**—is NOT preventive
 - Potassium salts of fatty acids
 - E.g., M-Pede, Safer's Soap
 - **Note: Do not apply directly to bees or beneficials, apply at night**
- **Spinosad** Some formulations are *OMRI-listed for organic use.
 - (Must have **direct contact, but most effective when larvae ingest it**)
 - E.g., Entrust, Success, Regard, Bonide Captain Jack's Deadbug Brew R-T-U
 - **Note: Apply at night** during dry weather to minimize risk to bees. Granular products are less risky to bees
- **Boric Acid**
 - E.g., Revenge Liquid Ant Bait, Terro Ant Killer II Liquid Ant Baits

- Note: Low toxicity to adult bees. Uses for indoor pest control are unlikely to affect bees- use caution if applying foliar fertilizers that contain boric acid.
- **Pyrethrin** Some formulations are *OMRI-listed for organic use.
 - Contact—affects insect’s nervous system
 - E.g., PyGanic, Azera
 - Note: **highly toxic to bees, applying at night can reduce risk to bees)**

Synthetic treatment

- **Acetamiprid**- neonicotinoid -Highly toxic to bees (E.g. Acetamiprid RTU Insecticide, Ortho Flower, Fruit & Vegetable Insect Killer R-T-U)
- **Acephate**—(E.g., Bonide Systemic Insect Control) Highly toxic to bees. Residual toxicity lasts > 3 days.
- **Bifenthrin**-(E.g., Brigade, Capture, Discipline, Sniper, Talstar) Highly toxic to bees.
- **Carbaryl (E.g., Sevin)**-Highly toxic to bees.
- **Cyfluthrin** – (E.g., Bayer Advanced Power Force Multi-Insect Killer R-T-S) Highly toxic to bees. Residual toxicity longer than 8 hours
- **Esfenvalerate**-. (Monterey Bug Buster II, Asana) Highly toxic to bees
- **Gamma-cyhalothrin**-(E.g., Bolton, Cobalt, Declare, Proaxis)Highly toxic to bees, Highly toxic to bees- residual toxicity longer than 8 hours
- **Lambda-cyhalothrin** (Warrior, Cyzmic, Demand, Voliam) Highly toxic to bees. residual toxicity longer than 8 hours
- **Malathion (E.g., Fyanon) Residual toxicity > 3 days**
- **Permethrin**-E.g., Ambush, Bee Gone, Pounce, Permestar) Highly toxic to bees.
- **Zeta-cypermethrin**-Highly toxic to bees- residual toxicity longer than 8 hours

Step 5. Evaluate results; continue monitoring (Step 1.) and continue through the steps as needed.

**For ongoing FREE support for your garden questions, call, visit, or email the
WSU Extension Plant and Insect Clinic**

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Nov - March - Wed 10 am to 12 pm

April – October MWF 10 am to 2 pm