

AAAAAAK! What's Eating My Garden?

A Guide to Garden Pest Management by Liz Nalle

INTRO

- Science based talk - many DIY and other homemade pesticides can do more harm than good. Sometimes one of these solutions will work, but it may not be because of the solution you used. And sometimes they might have long-term adverse consequences like using ivory soap, or any dish soap on a plant to kill insects, which can actually destroy the leaf cuticle. And applying a home remedy can, in some cases, be illegal

- Since I will be talking about Pests, I'll start with talking about controls – **PESTICIDES**

ORGANIC OR CONVENTIONAL?

- Organic pesticides generally come from things in nature that can be used to control pests. This includes substances derived from plants, minerals, and microorganisms. Many organic pesticides are less toxic than their synthetic counterparts, but that doesn't mean they are safe or won't cause environmental harm. USDA makes the differentiation based on whether the compound is synthetic or not
- Gardening itself is not a natural process
- Not all conventional pesticides are harmful
- They are highly regulated, too
- Organic doesn't mean pesticide free, and some organic pesticides are toxic. Just because something is naturally occurring does not mean it's safe
- The use of any pesticide, organic or conventional, must follow the label on the container by law.

- Also, before using any poisons or chemicals, think about the food chain and who will be hurt by their use besides just the target pest.

HOW TO READ A PESTICIDE LABEL

- ALWAYS READ THE LABEL FIRST!
 - Divided in two parts front and back. All labels are about the same • Labels provide directions on how to mix, apply, store, and dispose of a pesticide product. Using a pesticide in a manner inconsistent with its labeling is a violation of federal law.
- FRONT (usually):
 - Brand name – like medicines, the names may be different even though they contain the same active ingredient.
 - EPA Registration Number – Indicates that the pesticide product has been registered and its label was approved for sale by the Environmental Protection Agency (EPA), and EPA Establishment Number -Identifies the facility that produced the product.
 - Ingredient Statement – Active ingredients are the chemicals in the pesticide that kill or control the target pest(s). Inert ingredients often improve the effectiveness or safety of a pesticide. This section provides the chemical name of each active ingredient, the percentage by weight of each active ingredient, and the percentage by weight of all inert ingredients.
 - Includes all its names, common and chemical
 - Inert ingredients – not required but their percentage is
 - **Signal Words** – Signal words indicate the relative acute toxicity of the product to humans and animals. The statement, KEEP OUT OF REACH OF CHILDREN, must also appear

above the signal word on the label. If two products will control the same pest, signal words can help you choose the least toxic chemical to control the pest.

- DANGER POISON ☠ --Highly toxic by any route of entry into the body. Peligro, the Spanish word for danger, must also appear on the label.
- DANGER – Can cause severe eye damage or skin irritation.
- WARNING--Moderately toxic either orally, dermally, or through inhalation; causes moderate eye or skin irritation. Aviso, the Spanish word for warning, must also appear on the label.
- CAUTION – Slightly toxic either orally, dermally, or through inhalation; causes slight eye or skin irritation.
- Precautionary Statements
- Hazards – to people, animals and the environmental
- First Aid or Treatment
- Directions on How to Use – a legal statement
- Storage and Disposal
- Manufacturer Name and Address

DIFFERENT TYPES OF PESTICIDES

- Insecticides kill insects, herbicides kill plants, etc.
- Insecticides have different ways they work – contact or systemic poisons are very common, with residual or non residual effects. Some are more selective in their actions and targets than others.

IPM – Integrated Pest Management. The absolute best method of controlling pests

- This is a management approach, using several methods, all of which acting together will manage your pest problems. Because, to have a garden that's healthy for the environment, and you – we talk about management, not total eradication.
- There are in general 5 parts to IPM:
 - PEST ID – can't do anything about it if you don't know what it is
 - MONITOR AND ASSESS NUMBERS AND DAMAGE – if there isn't much damage, or there aren't too many of the pest, just leave it, and let the natural system you are encouraging do its thing
 - CHECK RECOMMENDED GUIDELINES TO DETERMINE IF ANY MANAGEMENT IS EVEN NEEDED – be careful who you ask. Lots of sources will advise you that the only good bug is a dead bug. We know that's not true.
 - PREVENT PROBLEMS – this maybe should have been first – anyway, right plant, right place. Think about plant selection, watering, your soil, sanitation, crop rotation, sun exposure. No till in vegetable gardens, to encourage soil predators and healthy soil. Your problems might stem from cultural practices.
 - LAST – CONTROL MEASURES. This is absolutely the last thing you should do. Use the most benign measure. There is a control pyramid, the base is Cultural Measures, then Physical/Mechanical/, then Biological, then Chemical.
- THE PESTS – problems and solutions can be different in vegetable gardens and flower gardens.
- Aphids – spray plants with water to physically knock them off, encouraging natural predators. You can spray but they are so easily controlled by water there's no point

- Beetles – Many kinds, one of the largest insect families. They can eat all parts of plants. They can also transmit diseases. To control you can time your plantings, many types of beetles feed early in the season. Use row covers and hand pick them. Japanese beetles feed on 300 plant species, larvae feed on roots of turf grass, handpick and avoid plants that are susceptible. Milky spore is good if you can get the whole neighborhood to do it. Just your yard is not great. Put traps far away.
- Caterpillars. As we know, most caterpillars are wonderful, they turn into beautiful butterflies and cool moths. However, if they can destroy a plant, they'll eat it to the ground. In this case, we always talk about managing the damage because we prefer to leave some to live to produce the beautiful moths and butterflies. Use row covers, this is a physical barrier to keep them literally off the plants regularly inspect the leaves, handpick the worms off create a diverse environment in your garden so that parasitic mop, wasps and birds can help control the worms use BT, Spinosad, or Neem. But try not to spray them on flowers to protect the pollinators
- Mealy bugs can reproduce asexually, and that's just not fair. In the same family as scales, so they have a protective coating. Are usually found in more protected areas, like in leaf axils. Honeydew and sooty mold. Alcohol on a Q-tip works well to kill individuals. But it's hard to completely eradicate them.
- Scale - physically remove, if possible, very common sign is honeydew and sooty mold. Hort oil outdoors, physically remove houseplants and spray. Contact insecticides only kill crawlers.
- Spider Mites - generally live on the undersides of leaves of plants, where they may spin protective silk webs, and can cause damage by puncturing the plant cells to feed. Physically remove, water, Neem. Frequent in dry environments.

◦ Whitefly/fungus gnat - yellow, sticky traps. For fungus gnats, they are a sign that you're overwatering. Let the soil dry out on your house plants. They actually aren't a problem for plants or humans, they're just really annoying. Let the soil dry out, scrape off the top inch or so of soil and replace it, replace all the soil if you need to. Because that's where their larvae live. White flies are not actually flies, but in the same family as mealy and scale. Their populations can build up very rapidly in warm weather. Hard to control with contact insecticide. And they are hard to control in general. Wash them off with water. They have many parasites so if you have a severe whitefly infestation, that means that somehow, the natural cycles in your garden have been disrupted.