

Think First...

Spray Last!

by Gary Fish, State Horticulturist

Find Out Why:

Blooming ornamentals....fragrant, colorful and a visual delight. Flawless fruits and vegetables....robust in size, color and flavor. Picture perfect lawn...deep green, weed free and evenly cut. These are dreams of those who garden.

Few gardeners' aspirations are not intruded upon by nature. Some challenges sport hospitable names like dandelion and lambsquarter while others--grubs, borers, apple scab and black spot--

sound downright sinister. But many people feel the presence of any pest means one thing: life threatening damage is underway. The fruits of one's labor have become a feast

for the unwanted guest, and the gardener must decide whether to take action to control the problem.

In today's world of convenience, many are quick to defend their dream gardens with bug sprays, weed killers, or disease controls. After all, these products claim solutions to the pest problem at hand. And since they are sold over the counter at the local hardware, grocery or department store, these product must be completely safe. Right?

Hardly! Science and the law recognize products with such claims as pesticides. And pesticides, by their very nature, are designed to be toxic--that is, poisonous--to one or more target pests. No pesticide is completely safe.



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Pesticides: More Common Than Perceived

The word *pesticide* usually conjures images of agriculture or crop dusting when, in reality, pesticides are used routinely by nearly everyone who encounters pests. Pests belong to a catalog of species as vast as the science of biology itself: from disease-bearing rodents to unsightly humidifier slime with scores of insects, weeds, fungi and germs in between. A pesticide is merely a mixture used to control these organisms once they negatively affect our environment.

Some pesticides are obvious such as the *insecticides* sevin and malathion. *D-Con*TM is a *rodenticide*; *Roundup*TM, an *herbicide*; and captan, a *fungicide*. But many products are not recognized as pesticides by their users. *Scott's Turf Builder*TM, a "weed and feed" product, contains herbicides. *Ortho Rose and Flower Care*TM is a Combination of fungicide and insecticide. Disinfectants *Lysol*TM and *Chlorox*TM bleach are pesticides because they kill bacteria. *Mildewicides* are commonly found in paints. Biological pesticides include *Bacillus thuringiensis*(Bt.) or *Beauveria bassiana*. Even tried and true products approved for organic growers, such as spinosad or pyrethrum, are pesticides because they claim to kill insects.

By now, you're asking, "Is anything safe, even the organics?"

Nothing is completely safe, not when it comes to pesticides!

The Applicator's Checklist

Avoiding use of a pesticide altogether is the most effective way to reduce health and environmental risks. Only consider using a pesticide when other avenues of control have failed. Follow this checklist before you apply.

- ✓ **Evaluate the situation** - Determine *exactly* what pest is causing the problem. Local resources like Cooperative Extension or licensed pest control companies are available to assist with pest identification. Send samples or request an on-site visit. Without this knowledge, the right tool for control will be elusive.
- ✓ **Know the pest** - With this knowledge, zero in on a susceptible stage of the pest. Application timing is critical. Control insects when they are small and more vulnerable. Don't attempt to control crabgrass late in the summer after the plant has produced thousands of seeds and has naturally begun to die.
- ✓ **Take measurements** - Before you go to the garden center to make a purchase, know how much area needs treatment. Purchase only what is needed right now, this season. Stockpiling pesticides creates greater potential risks for families and the environment.
- ✓ **Choose products wisely** - Look for products that are easy to handle such as granules and ready-to-use liquids. Concentrates require mixing, which can be risky business.
- ✓ **Read the entire label before purchasing** - Be sure the plant and pest are listed on the label. Check the "days to harvest" section. If the "days to harvest" is 21 days and you'll be picking next week, don't buy that pesticide. Determine what application and personal protective equipment is required. Don't leave without **all** the needed equipment.
- ✓ **Follow instructions** - Read the label to determine the proper mixing strength and how much mixture to apply over a given area. Never add a little extra for good measure. Some herbicides work better at lower concentrations because they enter the whole weed and kill the entire plant. Adding extra burns off the top of the weed and allows a new plant to grow back. Mix only what is needed. Practice with water ahead of time to be sure the right amount will be applied.
- ✓ **Look for sensitive sites** - Check around the treatment area and remove toys, laundry, pet bowls or anything else that shouldn't be treated. Prevent water contamination. Stay away from wells, ledge, sandy soils and open water. Don't apply a pesticide to a bare slope or just before heavy rains are expected.
- ✓ **Watch the wind and temperature** - Applying pesticides in high winds is a waste of time and money and could contaminate sensitive sites. Winds should be under five to eight miles per hour but not perfectly calm. Keep the spray close to the target and spray in the direction of the breeze. Don't apply when the temperature is greater than 65 degrees. Many pesticides are volatile and will not reach the intended target when used on hot days.
- ✓ **Spot treat** - If a pesticide must be used, only treat the infested area. Don't do broadcast treatments that waste pesticide and may harm beneficial organisms. Keep in mind the plant's condition. Some pesticides may burn or kill plants that are stressed. Many pesticide labels warn against the potential for "Phytotoxicity" or toxicity to plants.
- ✓ **Finish it right** - Keep people and pets away from treated areas until the re-entry time on the label elapses. Check for thorough coverage. Apply any left-over mix to another labeled site. Don't dump anything down the drain or on the ground. Application according to the label directions is always the best "disposal" method. Follow the label instructions for container disposal. Don't just send them to the dump. Call the Board of Pesticides Control for guidance at 207-287-2731.
- ✓ **Be patient and keep records** - After treatment, wait long enough for the product to work. Some products like *Bacillus thuringiensis* and Roundup may take up to two weeks before completely killing the pest. Repeating the treatment before then would be a waste and an unneeded addition of pesticide to the environment. If the treatment doesn't work, only repeat if the label allows re-treatment. Keep records of what was used and how well it worked. Records help you plan for the next application and prevent repeated mistakes.



Why risky pesticides are legal

Before any pesticide product ends up on the hardware store shelf, it undergoes batteries of tests to determine negative effects on humans and the environment. With these data in hand the U.S. Environmental Protection Agency weighs the compound's risks to people, pets and the environment. If those risks do not exceed established safety factors to protect children or people with challenged immune systems, the pesticide is registered, permitting legal use only **according to label directions**. Registration does not endorse the product's safety; rather, it **only** means that if the pesticide is applied according to label directions, the risks of use based on current knowledge do not exceed the guidelines established by Congress in the Food Quality Protection Act of 1996.

Benefits Vs. Risks

What are the benefits of pesticide use in the home garden? The primary benefit, often frowned upon by advocates against pesticides, is aesthetics. Homeowners simply want lawns weed-free and trees bright green and healthy. More tangible benefits include bountiful harvests, reduced spoilage of fruits and vegetables in storage and protection from biting or stinging insects. These benefits spur gardeners to purchase and use pesticides.

But when looking for a pesticide to derive these benefits, one needs to also think about the product's potential risks to the user, other people and the environment.

Public health officials measure risk with a formula that accounts for toxicity *and* exposure. For example, entering a nuclear reactor wearing a special protective suit poses little risk compared to living unprotected for many years in a house filled with radon gas. Constant or repeated exposure to low levels of almost any toxin may result in negative effects.

Health and environmental risks from pesticides result from improper use. At risk are children, neighbors, pets, treasured plants and even ourselves. Even products gardeners use as alternatives to conventional pesticides, such as organics or biologicals, pose risks.

Spinosad applied to flower blossoms will kill pollinators. Pyrethrins inhaled by unprotected gardeners causes uncontrolled coughing and could trigger an asthma attack. Don't be fooled by the "au naturel" marketing gimmick. Many of the most toxic substances on earth are natural or organic. Only a few drops of the organic pesticide nicotine sulfate can kill. Allergies to any type of pesticide will cause reactions, regardless of their source, natural or synthetic.

Gardeners who want a dream garden without the chemical nightmare must make their pesticide benefits outweigh the risks.

What can you do? Look for plant varieties resistant to pest problems. Make sure a pesticide is genuinely needed. Ask yourself, "Is this *really* a problem?" Instead of a pesticide use cultural or sanitary controls: pull the weeds, remove diseased plants, improve growing conditions. Prevent or control weed, insect or disease problems by placing plants in proper sites or by pruning overgrown specimens. Fight bad bugs with good bugs! Use or encourage beneficial insects and microbes by raising companion crops or by minimizing pesticide use.

If you must use a pesticide, read the application checklist on the left and remember the motto:

Think first...Spray Last.