

## Chemical Pesticides Aren't Always the Best Alternative For Controlling Pests

Chemical insecticides were first developed during World War II. They worked so much better than anything that had been developed up to that point that they were quickly embraced by farmers, health control officials, and eventually homeowners. But over time it has become evident that chemicals are not always the only, or even the best alternative, particularly for the homeowner.

**Hazardous to Humans-** They usually present some degree of hazard to the applicator and people who may come in contact with them.

**Resistance-** Whenever insecticides are used heavily, the resistant insects survive and reproduce until insecticides are no longer effective

**Effects on Non-Target Organisms-** Insecticides are not only toxic to the intended insect pest, but can contaminate soil and water and affect other non-target organisms, including beneficial insects, fish, birds and other wildlife. For example, honeybees are important pollinators, and are necessary for fruit production of many crops. An application of insecticides during flowering can be devastating to the bees and to the crop.

**Non-Renewable Resources-** Most synthetic chemicals are petroleum-based, and could become scarce in the future if we run low of non-renewable resources. Also, the cost of registering a pesticide has greatly increased and this cost is passed on to consumers.

## Maintain Good Plant Health To Prevent Insect Problems

**Plants under stress** suffer from pest infestations more quickly and more severely. Insects may even be attracted to stressed plants. Do not over water or under water. Fertilize properly.

**Rotate Crops (may be difficult in a small garden)-** Crop rotation involves replacing a crop that is susceptible to a serious pest or disease with another crop that is not susceptible, on a rotating basis. If this seems to be the case, don't plant that crop in the same spot for three years. This will break the pest cycle.

**Work the Soil. Add Amendments.** Heavy soils that do not drain properly may stress plants. Soil amendments such as compost loosen the soil, and help prevent insect problems by keeping plants healthy. Have your soil tested, and amend the soil accordingly.

## Plant Management Strategies

**Plant Resistant Varieties.** Some plant varieties are resistant to particular insects, but these may be difficult to locate. Check seed catalogs and University of Wisconsin-Extension publication A3110 for varieties with insect or disease resistance.

**Experiment with Companion Planting.** Although not based on university research, several books and publications are available that contain interesting information on "Companion Planting". "Trap cropping" is a method of companion planting that involves positioning the insect's preferred food near the crop to be protected. The insect pest is attracted to the trap crop rather than the desirable crop, and thus damage is prevented. If needed, the trap crop may be treated or destroyed to control the pests.

**Plant When Insects are not a Problem** Some insects are only pests at specific times of the year. For example, planting when adult seed corn maggots are not prevalent can significantly reduce damage by the seed-feeding larvae. Refer to UWEX Publication A2088 "Managing Insects in the Home Vegetable Garden" for a timetable of pest abundance and damage.

**Eliminate Weeds.** Weeds provide an alternate source of food and overwintering sites for many pests.

**Keep Things Neat.** Do not leave cut tree limbs or plant debris lying around. Damaged or freshly cut plant material tends to attract unwanted insects. Avoid providing hiding places, such as old planks, cardboard boxes and overgrown weedy areas. These places provide food and hiding places for such undesirables as slugs, earwigs, etc.

## Mechanical Control

**“The Two-Block Method”.** Pick off and destroy large slow insects, such as caterpillars and Colorado potato beetles. Place the pest on a hard surface such as a rock, and cover with a heavy object, such as another rock. Gloves are recommended to avoid “controlling” your fingers! Other methods such as submerging the insect in a pail of water can be equally effective.

**Hose Plants Off** A strong stream of water will dislodge aphids, whiteflies and mites from garden plants. Heavy rains can also be effective

**Avoid Outdoor Lighting** Abundant outdoor lights are popular, but are not a good idea around gardens and ornamentals because they attract many different kinds of undesirable insects. Bug killer lights also may do more harm than good because they seldom catch the insects you want to control, and are known to attract pest insects away from neighboring yards. They electrocute more beneficial insects such as lacewings than pests.

**Sticky Traps.** Traps with a sticky material (for example, Tanglefoot®) may be used to trap insects both indoors and out.

**Mechanical Barriers** Floating row covers can be used to protect many crops by preventing insects from laying eggs or feeding on the plant. Plant collars keep cutworms from attacking plants such as tomatoes.

## Biological Control

Biological control is the use of living creatures such as predators, parasites and diseases to control pest insects.

**Predators** are organisms that kill and feed on their prey outright. They are generally larger than their prey and must consume numerous prey in order to complete development. They include insects such as lacewings, parasitic wasps, praying mantis, and lady beetles; fish, birds, and mammals such as bats, shrews and moles.

**Parasites**, on the other hand, are usually smaller and often weaker than their prey. Parasites may be insects (wasps, flies, and beetles), mites, or nematodes. They lay eggs on or within a host insect and the immature(s) use the host for food over time. Individual parasites utilize only one or a few insects for food. Parasitic immatures can complete development in one host. Because they are extremely specialized, they often only attack one or a few closely related species of insect. They DO NOT harm humans or their pets. Gardeners may encounter caterpillars, such as hornworms, suddenly decorated with white egg-like structures. These are actually wasp pupae within silken cocoons. The caterpillar should be left alone, because it will soon die, and the wasps will emerge and attack more caterpillars.

**Disease organisms**, including viruses, rickettsia, bacteria, protozoa and fungi, attack insects. Some disease organisms have been grown commercially, and sold over-the-counter for insect control. A classic example is the bacteria, *Bacillus thuringiensis* (also called Bt). This bacterium produces a toxin, which disrupts the gut of the insect that eats it.

## Practice Integrated Pest Management (IPM)

If we are to reduce our reliance on pesticides and other preventive forms of pest control, we must increase our competency in the following areas:

- Distinguishing pests from non-pest species
- Understanding the life cycle of the pest and the severity and type of damage done
- Understanding how populations of a pest respond to various environmental factors such as weather and natural enemies
- Recognizing the beneficial natural enemies that help control the pest
- Routinely monitoring the pest and natural enemy activity
- Knowing effective and environmentally safe methods of controlling a pest when natural and biological controls are not effective.

### SouthEast Wisconsin Master Gardeners



Milwaukee County UW-Extension  
932 South 60th Street  
West Allis, WI 53214-3346  
Phone: (414) 290-2400  
Fax: (414) 290-2424  
<http://milwaukee.uwex.edu>

Compiled By  
John T. Kovatch