

Integrated Pest Management

Insects are not your enemy, just like weeds are not your enemy. They have a place in the mix. In fact, without insects running the world (which they do) we would have little food to eat, since much of it grows thanks to the assistance of insects. There are far more positive and helpful insects than negative, destructive ones. You just need to attract the good ones and put up a biological sign that tells the bad ones to go somewhere else. What you want are pollinators and beneficial insects that prey on the more problematic ones. An unwanted infestation of insects into the garden is not the **source** of a problem, it is a **symptom** of a problem in the garden that needs your attention.

Industrial agriculture loses around 20% percent of its mono-crops to pests each year. This is increasing each year even after copious spraying of major insecticides, mostly due to genetic resistance, and loss of predator insects. The thing is that prior to widespread use of the chemicals, before we opted for the mono crop model, the pests only damaged a small percentage more, and food-growing operations didn't have the added financial and chemical burden of pesticides.

Industrial agriculture is perpetually damaging to the ecosystem and is too dependent on chemistry. By spraying the soil for so long, they have not only wiped out the bad bugs, but all the beneficial ones too, on top of sterilizing the soil food web, increasing toxicity in waterways and losing the diversity of plants and organisms that keep disease in check. That's not the way to go.

Healthy soil food web.

One of your main jobs as an organic food grower is to increase the diversity of organisms in the soil. The more you develop the diversity of life in your soil, the more it can help your plants ward off attacks from a multitude of pests. Most of the time insects only attack weaker plants. Organic compost can be one of your best defenses. It helps keep plants healthy and robust enough to fight off many attacks on their own.

Diversity, diversity.

One of the best defenses is to have diverse crops all growing together. With good soil and diverse crops in a garden, you will typically only have a small percentage of the yield affected by pests. Avoid the practice of mono cropping, which leaves large populations of the same kind of plants exposed to major attack by one or more insect groups.

Consistent watering

When plants are experiencing stress from under watering, they lose much of their natural ability to ward off pests. Just like nutrients, the water must be available in

the soil for the plant to help itself. The same goes for over watering. Keep the soil moist but not too saturated

Garden netting, or insect mesh covering the crops can provide an active, yet benign remedy for keeping insects off the plants. This is more effective if done before the pests arrive. Many gardeners will learn which bugs tend to attack certain plants in their garden and when. Then the following season they cover those target plants before the pests have a chance to get to them. If you cover them too late, a generation of eggs may be ready to hatch and you will just be enclosing them to feast away on your plants.

Crop rotation

When pest population spikes in the garden it is just a sign of an imbalance that can usually be dealt with by gentle action. By pitching the affected plants and rotating crops or spraying down the affected plants with water and adding compost or worm compost tea a gardener can contain the problem without damaging the ongoing activity in the garden. No chemicals should be necessary. Besides, when pesticides are used they kill the beneficial insects along with the pests.

Beneficial insects: (These can be purchased at insectaries, and sometimes online)

Lacewings: eat aphids

Ladybugs: eat aphids

Ants: destroy fruit fly larvae, process organic matter and keep the garden 'cleaner'

Earwigs: prey on other insects

Beneficial residents:

Toads, snakes, spiders, and birds: eat all kinds of insects

Chickens: control earwigs and other insects from getting out of hand

Beneficial flowers and herbs;

All the following plants can help attract beneficial insects and divert the pests.

Plant them around the garden:

borage, nasturtiums, marigolds, spearmint, tansy, pennyroyal

When insects seem to take over any part of the garden, you might step back and consider some of the following:

-Is the soil dug properly

-Is the plant getting enough nutrients from the soil?

-Did you use enough organic compost?

-Is your soil pH too high or low to consider growing this plant?

-Did the plant get transplanted correctly?

-Are the plants getting enough water and sun?

-Are weeds encroaching on the plants?

- Did you purchase weak plants from a big box store and bring the problem to your garden?
- Did you bring in some amendment from off site that may have been harboring insects or disease?
- Have you been rotating your crops? Or are you growing the same thing in the same place year after year?

The following are some simple solutions to common pest problems

Flea beetles: getting into hot lettuce mix, mustard, or other greens:

Solutions:

- Plant a 'decoy' patch of the hottest mustard or arugula you can nearby and let them have that patch so they leave your preferred crop alone.
- Post some yellow plastic target traps along the affected patch. They should be vertical pieces about 1 foot x 1 foot posted amongst the affected plants and smothered on both sides with petroleum jelly. The flea beetles are attracted to the yellow color and when they jump to the placards they get stuck in the jelly.

Aphids or thrips overwhelming any plant

Solutions:

- Soapy water sprayed on the plant will kill the aphids and not the plant.
- Spray the plant leaves top and bottom with water to knock the aphids off.
- Capsicum (hot pepper) spray early on will keep them from laying eggs on plants.
- Release ladybugs in the affected area to prey on aphids
- Release lacewings to same effect.

Caterpillars: overwhelming any plant

Solutions:

- Let the chickens at them
- hand pick them off and through out or feed to chickens
- spray them off the plants and collect

Beetles: overwhelming any plant

- Go out at night or before sunrise with flashlight (when the beetles are often out) and pick them off by hand.

Tomato Horn Worm:

In early morning, or evening, find them on affected plants and pull off by hand. Feed to chickens, or put in pail of soapy water

Snails and Slugs:

- Go out at night with a flashlight, hand pick them and put in bucket of soapy water.
- Repeat for a few nights to get most, then repeat once or twice the next week.



Squirrels, chipmunks, wood rats, skunks, rabbits or other rodents:

Fences won't keep most rodents away from your precious plants.

One of the best practices is to use a live, cage trap (have-a-heart) and relocate the animals. This may take several trips, since you may have to trap a whole family or several families, but it can eliminate the problem with no harm done.

Deer: getting into everything.

-My best tactic is explained in the section on 'Garden size and borders'. I call it the 'psychological deer fence'. It's easy, cheap, chemical free, and it works.