



Ph: 203-484-2748  
Fax: 203-484-7621  
info@naturework.com

518 Forest Road, PO Box 489, Northford, Connecticut 06472 [www.natureworksgardencenter.com](http://www.natureworksgardencenter.com)

## ECOLOGICAL INSECT AND DISEASE CONTROL

The first rule of thumb in organic gardening is to **KNOW YOUR ENEMY**. Correctly identify your problem before panicking and running down to your local garden center or hardware store for the strongest poison you can find. By understanding the life cycle and characteristics of your pest or disease, you can choose the safest and least toxic control for you and the ecosystem that exists in your backyard. The second rule of thumb is **SCOUT FOR PESTS ON A REGULAR BASIS**. Stopping an infestation at the earliest stage is the easiest way to deal with a problem.

At Natureworks, we plant flowers, herbs, and perennials together. This attracts beneficial insects which help control the bad bugs. We release ladybugs to help control problems. We accept some insect damage as normal and strive for a balanced ecosystem. The longer we work with these methods, the less insect and disease problems we encounter and therefore we use less and less inputs. Nature creates a nice balance!

### Here are a few common garden problems and some safe solutions to control them:

**BLACK SPOT AND POWDERY MILDEW** Fungus occurs due to wet, humid weather. Fungus is encouraged by overhead watering instead of deep soaking at the soil level. It also is much more prevalent if you fail to open prune your roses, thin the stems of your Phlox paniculata, or do other basic garden maintenance tasks. **Monterey Complete Disease Control** is an effective tool against plant diseases. We have used this for years on houseplants, tropicals, flowering plants, shrubs, fruits, ornamentals and vegetables. Spray susceptible plants *before* you spot disease, such as on tomatoes in cool, wet weather. Continue to spray weekly and it will kill spores as it dries on leaf surfaces. It is a Biofungicide/Bacteriacide approved for organic gardening.

**RUST AND BOTRYTIS** are very common fungal diseases. Rust infects hollyhocks and many asters. It shows up as orange pustules on the back side of the leaves. Botrytis causes the blackening of the buds and leaves on Peonies. Both can be controlled by spraying **liquid copper** (copper sulfate) in the spring as soon as shoots emerge and again as the leaves unfold. Repeat throughout the summer, being careful not to spray if the temperature is above 86 degrees. **GARDEN SANITATION** is critical. Remove any blackened peony buds or leaves and discard them, do NOT compost them. Dip your sheers in isopropyl alcohol to disinfect them before moving on to other plants. Remove rust-infected foliage from hollyhocks and discard. Clean up all debris from the base of the plants in the fall, after the winter, and all summer long. For severe problems, remove and discard the mulch, and clean cultivate beneath the plants. Avoid overhead watering to reduce fungus problems.

**APHIDS AND BEETLES and other "bad" bugs** Garden insects come in all shapes and sizes. Learn what you are dealing with and their life cycle before you spray. For mild aphid infestations, simply hose off the new growth with a strong stream of water. Release ladybugs or green lacewings to eat the aphids! Also make sure you are not feeding your plants with too much nitrogen, which encourages the lush, tender growth that aphids especially like. Organic insecticides are non-selective, that is, they kill all that they contact. Avoid using them on any plants that are larval food plants for butterflies and moths. If you choose to spray, do so **ONLY** at dusk, after the pollinators have stopped flying. Spray **ONLY** the individual plant that has an insect problem. **NEVER** blanket spray your garden or you will kill the beneficial insects that control the bad bugs. Common organic insecticides are **Insecticidal soap** (made from potassium salts of fatty acids), **Neem** (active ingredient name azadirachtin) which is derived from the seed of a tropical tree, **Spinosad**, a cultured strain of bacteria, and Pyrethrum (from a South American daisy). Other products include **Hot Pepper Wax** (active ingredient is **capsaicin**) and **Diatomaceous Earth**. Hot pepper and garlic do not kill insects, they repel them. Diatomaceous Earth on the other hand will cut into an insect's exoskeleton and get lodged in its joints, drying it out.

**CATERPILLARS** Most caterpillars are easily controlled, if discovered at a young age, with **Bacillus thuringiensis (BT)**, a biological insecticide. This is a parasitic bacteria that is host-specific to the insects and is completely harmless to humans and the environment. Always remember that not every caterpillar is a “bad bug”. All butterflies and moths must be caterpillars at one stage of their lives. Learn to develop a degree of tolerance for small populations of insects and try to discover exactly what they are... you could be wiping out entire populations of Monarchs or Tiger Swallowtails in your desire for a totally pest free garden! And remember, caterpillars are a necessary food source for birds!

**SAWFLIES** look very much like caterpillars but are actually a group of insects related to wasps and bees. Adult sawflies are inconspicuous wasp-like insects that do not sting. The larval or immature stage of sawflies are plant feeders and look like hairless caterpillars (the immature stage of butterflies and moths). Sawflies often feed in groups and can quickly defoliate portions of their host plant. There are many different species of sawflies and each prefers specific plants or groups of related plants. Common sawflies on garden flowers include the Rose Sawfly (also called the Rose Slug) which feeds from mid-May through June, the Hibiscus Sawfly, the European Pine Sawfly (which infests Mughos pines April / May / June) and the Dogwood sawfly (which defoliates *Lysmachias* and our native red twigged dogwoods). *Bacillus thuringiensis* will **NOT** work on sawflies! Instead, use **Neem, Spinosad, or Pyrethrum** (as described above under “bad bugs”).

**SLUGS** Slugs are snails without shells. They feed at night and hide under leaves and plant debris during the day. They leave distinctive slime trails on leaves and stems. Slugs reproduce rapidly, laying hundreds of eggs a year. The eggs hatch in three weeks and baby slugs will start laying eggs when they're only a few months old. The most effective slug control on the market is iron phosphate, sold by the brand name **Sluggo**. This is a very safe bait that contains the active ingredient iron phosphate, which occurs naturally in the soil. Sprinkle it around plants that are being eaten. An effective early control to prevent the first generation of slugs from breeding in the spring is to sprinkle Sluggo in a band and cover it with a long board. In the morning, lift the board, discard the slugs, and repeat this process again the following evening. Do this until you don't see slugs any more. Vigilance in the spring means fewer generations of slugs will survive to breed all summer long!

**Sluggo Plus** contains Spinosad and kills earwigs as well as slugs.

**MOLES AND VOLES** are different creatures. Moles eat grubs and other insects; voles can travel through mole tunnels but they eat plant roots and are vegetarians. Mouse and rat traps can be used to control them. Castor oil repels moles and voles, and a product called **Repellex Mole and Gopher Repellent Hose End** which is sold as a hose-end sprayer, contains castor oil and paprika. You can drench the infested area or put the hose down the obvious holes (runs) and flood the area. This is best done weekly until the problem subsides. The granular **Repellex Mole and Gopher Repellent** contains 10% Ricinus communis oil (castor oil), wintergreen, paprika, and garlic in a sodium lauryl sulfate solution. Clean, dustless, biodegradable granules are safe for use around children, plants and pets. Pour it down the mole or vole tunnels; broadcast it just before a prolonged rainy period so that it will be dissolved into the soil or water well after applying with your spreader. **Repellex Systemic Granular**, a capsaicin based product, will provide up to 3 months of protection when applied and watered in around the base of a plant. As a systemic, it is actually brought up into the plant. It will not wash off and will make the plant unpalatable but *won't* harm pollinators. Repellex Systemic is only effective if a plant is actively growing. Not for use on food crops (it will make them taste like hot pepper!) An excellent product to use with bulbs in the fall. As their roots grow, Repellex Systemic is taken up into the bulbs and will protect all winter long. It should be reapplied in very early spring as soon as new bulb flowers or foliage emerges.

**IRIS BORER** The life cycle of the iris borer is as follows: Caterpillars emerge from the soil in April or May when the leaves are 5-6" high. They climb the foliage, pierce the leaves, and enter the leaves. They tunnel down (leaving linear tracks) and enter the rhizomes, growing to be fat, flesh colored worms 1½-2" long. They eat out the center of the rhizomes then migrate into the soil, where they pupate. In late summer and fall they turn into night-flying moths that are purplish yellow in color. The moths lay eggs on the iris foliage and debris at the base of the leaves. Eggs are a creamy green, later turning lavender. The most important control measure is GARDEN SANITATION! Cut and eliminate all stalks and foliage each fall, as they are the primary over wintering site. Do this late into the fall, shaving the foliage as close to the rhizomes as possible. Do not compost; discard in the trash. In early spring, if you see borer tunnels starting in the leaves, pinch them to kill the larvae.

**SCALE** is a hard-shelled insect that can cover the stems of the plant and suck the life out of it. It is very common on Euonymus. The best control is to spray the plants in winter with **All Seasons Horticultural & Dormant Spray Oil**. This kills all stages of insects, including eggs. Use during the dormant and the growing season as needed, following directions for each season.

**BLACK VINE WEEVILS** are night feeders making jagged chew marks on the edges of the foliage. Since you cannot see them during the day, it is very frustrating to diagnose your problem!

An excellent website to read about black vine weevils is:

<http://ag.umass.edu/fact-sheets/black-vine-weevil>

Adult weevils emerge in June and feed through July. At the end of May, use 2x3' burlap square folded into 4" pleats and placed snugly around the base of the plant. When adults crawl to the base of the plant before daylight, they will settle in the pleats of the burlap. Collect and discard them. In mid-June, inspect burlap traps weekly and collect adult weevils. Continue trapping until the traps cease to produce any new weevils for at least two weeks. For a small infestation, spread a drop cloth under your shrub (at night) and "beat" the branches. They will drop into the cloth and can be destroyed.

**Beneficial nematodes** also control the larvae of black vine weevils in the soil.

**GRUBS** The larval stage of the Japanese and other beetles are called grubs. They not only attack the roots of lawn grasses, but they also turn into plant and flower chomping adult beetles! There are three methods of controlling them.

**grubGone** (*Bacillus thuringiensis galleriae*) is a bio-insecticide used to control beetle grubs such as Japanese, Asiatic, June, and Oriental beetles, European chafers, and more. It is an effective control in all life stages including the later 2<sup>nd</sup> and 3<sup>rd</sup> instar forms. Thus, it can be used as a curative treatment as well as a preventative.

**Beneficial Nematodes** are a natural control measure. These are microscopic organisms that invade and kill grubs within 24-48 hours. They are mixed with water and sprayed on the soil in summertime until mid-October and will provide control for 6 weeks. ***Because they are living organisms, you must follow directions exactly regarding refrigeration and application.*** Our beneficial nematodes are live for a very long time if properly refrigerated. The boxes are dated for shelf life.

### **Sources of information on organic and ecological pest control:**

1. Natureworks website: [www.natureworksgardencenter.com](http://www.natureworksgardencenter.com) located under Handouts. Also, read our blog posts and subscribe to our weekly email which contains timely tips.
2. North Country Organics Technical Manual. It is updated regularly and posted on-line. Go to [norganics.com](http://norganics.com)
3. Organic Land Care Standards, published by the Organic Land Care Committee of CT and MA.  
Website: <https://nofa.organiclandcare.net/>

*In an effort to provide horticultural information, these educational documents are written by specially trained Natureworkers and are the property of Natureworks Horticultural Services, LLC. You are granted permission to print/photocopy this educational information free of charge as long as you clearly show that these are Natureworks documents.*