

Organic Disease and Pest Control

There are many natural methods of dealing with insects and plant diseases. Sometimes called organic methods of gardening, these approaches are safe, non-toxic, frequently passive, and preventative. They are easily implemented and generally much cheaper than chemical alternatives. Organic methods use the natural elements of the environment to maintain a healthy balance in the garden. One of the very unfortunate effects of pesticide use is that it destroys the natural balance, and frequently, more and more pesticides are required in order to rectify a perceived problem.

One approach to disease and insect control is passive and preventative. If a problem becomes persistent or particularly annoying, you may want to take a more defensive tact.

Preventative Measures

Strong, healthy, plants are much more able to resist disease and insect infestations. Healthy plants are also, of course, essential to a beautiful garden. To promote and maintain vigorous plants:

- o grow them in the situation to which they are best suited. (Shade plants in the shade, sun loving plants in the sun.)
- o provide fertile, well drained soil.
- o drought-proof plants.
- o provide adequate water, but avoid frequent sprinkling or over-watering.
- o weed regularly to eliminate plant competition and possible carriers of disease and insects.

Insects and disease thrive in decaying plant material. Keep a tidy garden. Deadhead regularly. Prune away dead or dying foliage. Clean up fallen leaves. If possible, it is best to perform a complete clean up of the garden in late fall, or alternatively perform this chore very early in the spring before new growth begins. Use only thoroughly composted organic material. Never compost foliage with a disease or insect problem -- put it out with the trash. Good garden hygiene goes a long way to discouraging insects and disease.

Once you have abandoned pesticides, many natural bug fighters will move in to fight the battle for you. One of the greatest pleasures in my garden is to encourage birds, frogs, toads, snakes and specialized insects. Birds are easily enticed with houses, baths, and through winter feeding. If there are shrubs or trees in the yard, many birds will become permanent residents. Frogs, toads, and other interesting aquatic life may be drawn into the garden by providing a source of water, such as a small pond. Specialized bug fighting insects (such as ladybugs) may be purchased or invited into the garden by growing appropriate food plants.

There are many beneficial creatures (including insects) in the garden. Encourage them to work for you. (It's free labour!!)

Improper watering is one (if not THE) major reason why plants perform poorly, do not overwinter well and are constantly prone to insect infestations and disease. Learn to use proper watering techniques on all plants including perennials, annuals, vegetables and grasses (ie lawn). Water deeply and less frequently. In order to be of use to the plant the moisture must penetrate deep into the soil -- at least 6-8". Deeper is better. Water your plants and test the soil to see how deep the moisture has penetrated. You will be amazed at how much watering is necessary in order to be effective. Avoid shallow, frequent watering which creates a humid, moist atmosphere around the plant and promotes fungal diseases, rot and attracts insects. Frequently watering also encourages the germination of weed seeds. Allow the top 1-2 inches of soil to dry out completely between waterings. By watering deeply and less frequently you will be growing plants with deeper roots which are then

more able to withstand drought, winter temperatures and also diseases and pests.

Defensive Alternatives

Sometimes despite best efforts, insects or disease attacks a perennial, and it may be necessary to take some type of action. Warning - Don't read this if you are faint of heart.

Slugs

Slugs are perhaps the most persistent and despised garden pest. Slugs prefer moist shady situations, but can retreat underground when the weather is hot. Most frequently, they emerge at night to feast on succulent foliage. Slugs can be controlled in a variety of ways. Barriers utilizing copper or aluminum strips, crushed egg shells, wood ash or lime can be laid to surround vulnerable plants. Slugs with soft mushy bodies find these materials offensive and even deadly. Barriers are less effective than some other methods because the slug may be able to tunnel under the obstacle and still reach the plant.

Traps are reasonably effective for catching and killing slugs. Fill a small plastic margarine container with beer, or a mixture of water and a few pieces of dry dog food, and sink it into the ground to its lip. Slugs are attracted to the "drinking hole", fall in, and drown. Depending on the number of slugs, the traps should be emptied and refilled regularly. (Note that commercially prepared slug bait is very attractive to dogs, birds, and even children. It is, however, also highly toxic!)

Diatomaceous Earth (DE) - is a purchased product that works well at repelling slugs. This powder-like substance is actually tiny, almost microscopic silica which has been mined and milled from fossil remains. It kills slugs and many other bugs (including fleas) by mechanically cutting their body, thereby causing dehydration. "Natural" grades of DE are nontoxic to mammals, however DE may kill beneficial insects and therefore should be used with care in only localized problem areas. Apply a liberal dusting of DE to wet foliage, paying particular attention to the underside of leaves. Safer's has a new non-toxic Slug & Snail Bait which is easy to use and quite effective.

Essential Slug-fighting Equipment - One of the most effective alternatives for eliminating slugs (and the most gruesome perhaps) is the collect and kill method. This means handpicking and killing the creatures by stomping on them, or drowning them in a sealed container. Slugs can be collected late evening, early morning, and during or just after a rain shower. They can usually be found on the underside of leaves, and under logs or pieces of wood. A useful lure can be created by placing a board in the garden and collecting the slugs underneath it on a regular basis. If you are squeamish (as I am), don gloves, and using a butter knife or other blunt flat tool, knock the slugs into a container for subsequent final extermination.

Applied very early in the season, an ammonia soak can be very effective, particularly around Hosta. Combine 1 part ammonia with 20 parts water. Soak the soil surrounding Hosta and/or other perennials. The must be applied before plants have emerged from the ground and NEVER directly onto a plant.

Caterpillars, Aphids and Other Undesirable Insects

Some larger insects such as caterpillars may be also be controlled by hand picking, but usually they are too small and too numerous. A similar but more effective alternative is the shake and destroy method. Spread newspaper or scrap cloth under the plant. Then shake the plant vigorously, dislodging the bugs and hopefully dashing them to the ground. Carefully gather up the groundcover and burn, soak in water, or dispose of in a tightly sealed garbage bag.

Sometimes bugs can be blasted away with a steady stream of water. If using this method, make sure the spray is hitting the underside of the leaves. The water jet method works best if used on a regular basis -- even daily -- during periods of high infestation.

The most popular methods for controlling bugs are sprays, and there are many effective home remedies. Most are cheap, safe, and easy and convenient to use. Following are some recipes that I use on persistent bugs. If one recipe does not appear to be effective, try another or slightly change the ingredients.

Basic Soap Spray

Quart hand sprayer filled with warm water

Add a squirt of non-detergent soap such as Ivory or baby shampoo

Do not use detergent as this could harm your plants.

Additions to the Basic Soap Spray

It is most convenient to prepare additives in larger quantities and store the mixture for future use in a glass container, such as a small jam jar. When using the mixture, just add a teaspoon to your quart container of basic soap spray. It is best to test the mixture on one or two leaves before spraying the entire plant, to ensure that no leaf damage will result.

1. Oil Additive

Add a teaspoon of vegetable oil to the basic soap spray to improve adherence.

2. Garlic Spray

Combine about 1/2 cup of mineral oil with a dozen or so crushed cloves of garlic. Allow to stand for 48 hours. Strain. Start by using roughly 1 tsp in your quart sprayer.

3. Hot Spray

In a food processor, liquify a small onion and an entire bulb of garlic. Seep this mixture in a cup of olive oil. After 48 hours, strain the olive oil and discard the pulp. Add a half teaspoon of cayenne pepper. Store in a glass jar. To use, add a teaspoon to basic soap spray.

Nicotine Spray

Soak an old broken up cigar in a quart of water for 48 hours. Strain and use. If this "tobacco tea" is very dark, it can likely be diluted.

"Safe" sprays are available commercially, the most popular being insecticidal soaps. When buying these products, carefully read the ingredients on the label to ensure that no toxic ingredients have been included. Do not rely on the product name alone. A name like "Green" or "Environmentally Safe" does not mean that the product is non-toxic.

Generally, studies have shown that home remedies are as effective as commercial spray. However, home remedies may damage plants if used in high concentrations. Cautious experimentation is advisable. It is also helpful to keep some notes documenting mixtures and their effectiveness for future reference, and to share with fellow gardeners. (Just like cooks share recipes.)

Plant Diseases

Well-maintained, vigorous, perennials are generally disease free. However, certain popular varieties are prone to persistent fungal conditions such as powdery mildew, rust, and botrytis.

Mildew is a white, powdery fungus that covers the leaves and stems of infected plants. Although rarely fatal, it does rob the plant of its beauty. Plants most routinely affected are Summer Phlox, Monarda, and Asters.

Rust is another type of fungal affliction that disfigures the plant's beauty but rarely kills. Members of the Mallow Family, in particular, Hollyhocks, seem most prone to this disease. Rust usually attacks the leaves, causing conspicuous red-orange blemishes.

Botrytis is a very serious fungus disease which may destroy the entire plant if not treated early. It is most frequently seen in Peony and is characterized by brownish-gray mould on the foliage, which subsequently wilts and turns black. At the first sign of this disease, remove infected parts and burn them.

Many fungal diseases can be discouraged by good garden sanitation. It also helps to locate susceptible plants in moist, fertile soil, in a spot with good air circulation. Water-stressed, or crowded, plants are more prone to fungus infections. Excessive moisture on the plant's foliage is also a factor that contributes to the spread of fungal spores. Watering the plant is therefore best done at ground level, rather than spraying water over the plant.

There are several home remedies available that will control and act as a preventative for many fungal diseases:

Baking Soda Spray

1 quart of water

1 teaspoon of baking soda

1 squirt of liquid, non-detergent soap

Spray infected leaves thoroughly, including undersides and stems. In damp weather repeat regularly. This is an effective mixture to help prevent botrytis, black spot, rust, and powdery mildew.

Potato Starch Spray

1 quart of water

2 to 4 tablespoons of potato flour

1 squirt of liquid, non-detergent soap

In addition to fungal diseases, this blend is also an effective insect spray.

Sulfur

Sulfur has been used as a natural fungicide for thousands of years. It can be purchased as a liquid or a powder.

Sulfur acts as a preventative, and should therefore be applied before the disease is evident. It is useless to spray after the blight is already visible.

Bordeaux Mix

Bordeaux mix is a very powerful, organic fungicide that has been in use for centuries. It is available commercially as a powder which can be dusted onto plants, or mixed with water and sprayed. Read the directions very carefully, and if in doubt, use a solution that has been severely diluted. In excessively high concentrations, Bordeaux Mix can kill the plant.

This only scratches the surface of organic gardening. An excellent, easy to read and follow reference text is *Rodale's Chemical-Free Yard & Garden*. Another favorite is Marjorie Harris' delightful and very informative *Ecological Gardening*.

In our modern, high tech, fast moving world, it seems impossible that a single individual could effect meaningful change. And most of us, pattering in our gardens, will never be world revolutionaries. But we are each masters, kings and queens, of our own plot of soil, and change comes with a single step or a single spray.