***Pesticides: Selection, Safe Use, and Alternatives***

By Maureen O’Connell

At one time or another, many gardeners consider insecticides and fungicides to deal with problems of their ornamental plants and vegetables. Problems vary, depending upon your area’s weather conditions, soil, and local pests, from insects to deer. Conditions also vary in different parts of the world. The farmers I saw in India and Vietnam and the gardeners in England have to deal with different climates, diseases, and pests. English gardeners do not have the problem that we have with insects, and most notably for me, they do not have to battle with Japanese beetles on their roses.

Over the past several years, I have altered my methods of dealing with garden problems. When, one day after spraying with a chemical insecticide, I noticed dead bees on the beautiful blue flowers of my *Agastache* plants (which the bees love), I decided to stop using products that were toxic to bees and other beneficial insects. There are many insecticides and fungicides at garden centers; it is confusing trying to select which ones are right for your problem and are also friendly to the environment. Let’s take a close look at pesticides and their alternatives. The best method of eliminating a pest problem is to incorporate garden practices that prevent the problem. Prevention is a lot easier than a cure.

Pesticide is the general term for any substance used to prevent, destroy, repel, or mitigate the effects of any pest: insects, animals, weeds, and microorganisms such as fungi, molds, bacteria, and viruses. Subcategories of the term include: insecticides that specifically target insects; fungicides that target diseases caused by fungi; and herbicides that target unwanted plants and weeds.

Let’s now look at some cultural methods to alleviate problems before resorting to chemical warfare.

My first recommendation is to select plants that are described as highly-resistant to diseases and unappealing to insects and animals. Horticulturists spend years developing new plant varieties that are hardier and easier to grow and maintain. After many years of gardening, I know fairly well which ornamental plants are disease and pest resistant. They range from rugosa roses, coneflowers, coreopsis, coral bells, and many other perennials to annuals, such as marigolds, petunias, zinnias, and geraniums. Most good garden centers group their plants according to these criteria.

Humans need sufficient nutrients to stay healthy, and so do plants. Feed them with a plant-appropriate fertilizer and satisfy their growing needs for such things as water and light conditions, and they will be stronger, and therefore better able to stave off diseases and pests. They will also be better able to handle the stress of heat, drought, and high humidity.

Try a bit of soap and water. You can buy at garden centers insecticidal soap, but save yourself some money and make your own. A spray of dishwashing soap and water has been used in the gardens for many years. It works only on direct contact with the pests; there is no residual effect, so if you have a large garden, this method might be a bit impractical. It works by the action of the fatty acids in soap which disrupt the structure and permeability of the insect cell membranes. The cell contents are able to leak from the damaged cells, and the insect quickly dies. Before spraying on any of your plants, test the solution on a small area of the plant. Some plants, such as azalea, begonia, lantana, gardenia, impatiens, and ferns might be sensitive to soap. It works best on soft-bodied insects, such as aphids, mealy bugs, spider mites, thrips, and whiteflies. To make the solution, add a few good squirts of soap into a quart-sized spray bottle and fill with water. Some gardeners say that an oil soap and water solution, such as Murphy’s Oil Soap, is effective for killing fungal diseases on plants. Mix one cup of oil soap to a gallon of water. I have not yet tried this, but I will.

If you choose to use chemicals, first evaluate some other effective options. Non-chemical pest controls such as pheromones are very useful for disrupting pest reproductive cycles. You could also manually remove the insect pests, and you could get your weed fork out and dig up the weeds.

If any of the above methods do not work, apply the least toxic pesticide in a responsible way. Spray early in the season―prevention, not cure. Spray early in the morning before the beneficial insects and bees are out doing their work. Do not spray in bright sunlight; the plants’ leaves could burn. Be sure to first identify your pest problem. There are many insects that are harmless. Many people are alarmed to see ants on their peonies. Don’t be; they are doing no harm. If you cannot identify a problem, take a diseased leaf or a dead insect to your local garden center and ask for their advice.

If at the end of all your efforts, you still have some plants that have pest and diseases that you cannot control, dig up the plant and discard it. Life in the garden is too short to spend most of your time battling nature. Your hammock awaits you.