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Thy Foul Fiend Flibbergibbet

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“Thy foul fiend flibbergibbet mildews the white wheat.” Shakespeare’s epithet for plant diseases in England during the 1500’s. Most people in that age thought plant diseases were the work of the Devil or an evil spirit. It wasn’t until 1846 when Anton De Bary, a German botanist, demonstrated that microorganisms were the cause and not the result of plant diseases.

This is the time of the year when gardeners are most likely to see disease symptoms in the garden. Plant diseases are a bit of a mystery since most plant maladies are blamed on insects, herbicide injury, weather conditions, lack of fertility, and other animate and inanimate factors. However, while insects do cause many plant injuries, the biggest cause of problems in the garden, other than the weather, are plant diseases.

Historically, plant diseases have significantly affected human history. Irish immigrants came to the US in the 1850’s because of a plant disease (potato late blight) that caused the Irish potato famine. What is not so well known is this plant disease also occurred in northern Europe causing many of our German and Scandinavian ancestors to emigrate.

Potatoes can still become diseased by the late blight fungus, particularly during cool, wet weather. Plant resistance has been a control but the disease still occurs. Symptoms are purplish-brown lesions on the surface of tubers and blackish, water-soaked lesions on leaves. A white “fuzz” of fungus spores can be seen around the lesion margins, particularly on the underside of the leaf. On stems, late blight causes “greasy” brown lesions. Late blight can also occur on tomatoes and egg plant. The fungus overwinters in infected tubers left in the garden. Control is application of fungicides and disposal of infected tubers.

The little black specks on tomatoes that multiply and cause the leaves to yellow and die is the most common tomato disease in the Grand Rapids area, Septoria leaf spot. The causal fungus overwinters in tomato residue and produces spores in the spring and early summer that infect the growing tomato plant. By this time of the year some tomato plants will be almost defoliated and black specks will be present on the fruit. Eventually, the fungus will also rot the fruit unless it’s picked and eaten in time. Green tomatoes placed in a closed bag to ripen will also rapidly decay.

There is no single control for this disease. Some varieties are reported to be resistant. They are not. All tomato varieties are susceptible to a certain degree. However, some measures can be done to lessen the effect of the disease. Next year grow tomatoes several feet away from this year’s planting site. The spores are spread mostly by splashing water and may not be transported very far away. Place a straw mulch around the plants and water carefully at the base of the plant taking care not to wet the foliage. Don’t crowd plants but space them as far from each other as practical. Lastly, use a fungicide. Many are available at Bloomers and are effective in disease control. However, the fruit must be washed carefully to remove fungicide residue. The fungicide must be applied early in the summer then every two weeks.

Black-green spots that occur on apple trees and defoliate the trees is a symptom of apple scab. Crab apples are especially vulnerable but most apple types are susceptible to a certain degree. This disease occurs annually but again, the disease can be lessened by following a couple control measures. The fungus overwinters in infected leaves but also on the bark of the tree. Removing all fallen leaves from the base of the tree will help but the best control is the use

of fungicides. The disease infects early in the spring and symptoms may not immediately occur. The fungicide applications should begin early in the growing season and continue throughout the summer. The present fungicides need to be only applied every two weeks or so but again make sure the fruit is well washed before consuming them.

The white powdery substance on the upper leaves of monardas (bee balm) is powdery mildew. Powdery mildew is the most common disease problem associated with Monarda and often contributes to the poor condition of plants in late summer. Severely infected foliage may be distorted or drop prematurely. The incidence of powdery mildew can be reduced by allowing good air movement between plants, ensuring the soil does not dry out, removing diseased leaves and stems to destroy the overwintering stage of the fungus, and choosing mildew-resistant cultivars.

Plant wilting is caused by fungi and bacteria. A good example of wilt is cucumber wilt caused by a bacterium that is introduced into the plant by striped cucumber beetles. The plant will initially become limp, turn yellow then gray and finally dies. This is caused by the xylem or water-conducting vessels of the plant becoming plugged by the pathogen, resulting in water being unable to move up the plant. Besides wilted plants, a good diagnostic technique is to cut an infected stem and slowly pull the cut ends apart. If this is bacterial wilt there will be a "string" of bacteria between the cut ends. Wilt is controlled by resistant varieties. Fusarium wilt is caused by a soil-borne pathogen that attacks potato, tomato, eggplant, and pepper plants. Fungi enter through the roots and plug the water conducting vessels of the plant. As the infection spreads up into the stems and leaves, it restricts water flow causing foliage to turn yellow and wilt. The best means of control are resistant varieties. Similar symptoms are caused by drought or a misapplied herbicide.

A common symptom of virus infections, either seedborne or vectored by aphids, is distorted plants that are confused with some herbicide injury. Plant leaves and stems may be twisted and otherwise misshapen. One of the most common herbicide to cause this confusion is any product with 2,4-D as the active ingredient. There are numerous virus-caused diseases and a good way to separate the injury caused by viruses from that of herbicides is to look at the leaves. Virus infections will have leaf veins in a somewhat "normal" position whereas herbicide injury will cause the veins to grow together in a "shoestring" pattern.

Another common disease in the Grand Rapids area is aster yellows. This is caused by the aster yellows phytoplasma (a bacteria-like organism) that is carried to the plant by the aster leafhopper. Aster yellows affects a number of plants but the home gardener is most likely to see the disease in their carrot patch. Leaves are misshapen and reddish to yellow in color. The roots are "hairy" and unsuitable for eating. This disease has no cure and affected plants should be removed immediately. Unfortunately the disease also affects a large number of other plants including cone flowers. In nurseries and high value areas insecticides can be used to control the leafhoppers.

Bloomers has a good supply of insecticides and fungicides for the home garden. Read the label to insure the proper chemical is being used to control the specific disease.