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COMMON DISEASES OF CRABAPPLE

There are a number of diseases that commonly occur on crabapples in home plantings. Scab, cedar-apple rust, and cedar-hawthorn rust are diseases that are usually encountered every year whereas fire blight is an occasional problem. Many factors contribute to both the occurrence and the severity of these diseases. Some of these include: severity of the infection the previous year, weather at the time of budbreak, cultural practices, and type of crabapple variety planted.

I. CONTROL STRATEGIES:

Crabapple diseases can be effectively controlled through the combined use of culture, sanitation, resistance, and fungicide sprays. This integrated approach to disease control minimizes the reliance upon one type of control over the others and usually results in effective disease control.

A. CULTURE-

Cultural methods include maintaining tree vigor by proper planting, fertilizing, and pruning and by following general practices that help to minimize tree stress.

B. SANITATION-

Sanitation involves pruning and removing affected or dead portions of the tree and removing diseased foliage or fruit which are often important sources of inoculum for the next season.

C. RESISTANCE-

Resistance involves selection and planting of varieties with genetic resistance to specific diseases. This effectively reduces or eliminates occurrence of the disease in question.

D. FUNGICIDE SPRAYS-

Proper selection, timing, and application of these sprays are important. Thorough coverage of all parts of the tree is necessary and sprays should be applied until run-off. The fungicide label will contain information on plant hosts and diseases, dosage rates, and safety precautions.

II. COMMON DISEASES:

A. SCAB-

Scab, caused by the fungus *Venturia inaequalis*, is the most common and one of the most devastating diseases of crabapple in Connecticut. Defoliation of trees as a result of this disease is not only unsightly, but also reduces the vigor of the tree, making it more susceptible to environmental stress and other opportunistic pests. Scab is usually most severe in wet weather. The fungus causes circular, olive-black spots on the leaves, fruit, and young fruit stems. As the spots develop, the leaves may turn yellow and drop prematurely. Symptoms typically first appear on the leaves in May or early June. Heavy infections can result in defoliation by June.

The fungus overwinters on dead, fallen leaves and produces spores (primary) in the spring which can infect sepals, young leaves, and young fruit during periods of rain. Infection from these primary spores can take place at any time after growth begins until mid to late June if suitable weather conditions exist. During the summer, a different spore (secondary) is produced by the fungus which is capable of inciting more new infections when splashed onto leaves and fruits by rain.

Scab is most effectively controlled by planting resistant varieties. A partial list of resistant crabapples includes: Adams, Baskatong, Brandywine, Callaway, David, Dolgo, Donald Wyman, *Malus floribunda*, Henry Kohankie, Henningi, Jewelberry, Ormiston Roy, Professor Sprenger, *Malus seiboldi* var. *zumi* cultivars Calocarpa, Silver Moon, Sugartyme, *Malus tschonoski*, Weeping Candy Apple, White Angel, and White Cascade. A good sanitation program in which diseased leaves and fruit are removed from the vicinity of the tree will also help to eliminate sources of inoculum in the spring. Scab can also be controlled with properly selected and timed fungicide sprays. Among the fungicides registered for use in Connecticut are thiophanate methyl, mancozeb, chlorothalonil, chlorothalonil + fenarimol, and copper sulphate pentahydrate. Applications can be made at budbreak and repeated at label intervals until mid-June. More frequent sprays may be necessary in wet weather.

B. CEDAR-APPLE RUST-

Cedar-apple rust, caused by the fungus *Gymnosporangium juniperi-virginianae*, is a problem when crabapple and certain species of juniper and red cedar grow in close proximity. This rust requires two different hosts to complete its life cycle. The fungus causes brilliant yellow-orange spots or lesions on crabapple leaves and occasional lesions on the calyx end of the fruit. On cedar, the fungus produces brown to reddish-brown galls, ¼ -2 inches in diameter. During rainy periods in the spring, distinctive bright orange, gelatinous spore-horns protrude from the surface of these galls. The spores are blown by the wind to crabapple trees where they infect and produce their characteristic lesions.

Removal of unwanted junipers or cedars located in close proximity to the crabapple tree usually reduces the number of spores capable of infecting although this is often not practical. Galls can also be removed from juniper branches during dormancy. However, selection and planting of resistant varieties are the most important and effective methods of control. Examples of rust-resistant varieties are: Ellwangerina, Henry Kohankie, Ormiston Roy, and Red Baron. Where the disease seldom occurs or few leaves are infected, no control is necessary. Where disease is frequent and severe, fungicide sprays can be applied to the rosaceous hosts. Among the fungicides registered for use in Connecticut are chlorothalonil, ferbam, mancozeb, triadimefon, triforine, and myclobutanil. Applications can be made at budbreak and repeated at label intervals as necessary. More frequent sprays may be necessary in wet weather. Fungicide control for *Juniperus* hosts is usually not practical since it often requires a season-long spray program.

C. CEDAR-HAWTHORN RUST-

Cedar-hawthorn rust is caused by *Gymnosporangium globosum*, a fungus which is related to the cedar-apple rust fungus. Because these fungi are so closely related, the diseases caused by them

are very similar. Cedar-hawthorn rust also requires two different hosts in order to complete its life cycle- these include *Juniperus* species (e.g., eastern red cedar) as well as many rosaceous species. However, cedar-hawthorn rust has a wider rosaceous host range than cedar-apple rust which includes apple, crabapple, many hawthorns, pear, quince, and serviceberry. Mountain ash and medlar have also been experimental hosts of this fungus. The disease cycle is essentially the same as previously described for cedar-apple rust. Cedar-hawthorn rust usually infects leaves but can also produce symptoms on fruit and green stems which results in deformity. Cedar-hawthorn rust can be distinguished from cedar-apple rust by several attributes of the aecia on the undersurface of the leaves of the roseaceous host. For example, the fingerlike projections of the aecia of cedar-hawthorn rust are substantially longer than those of cedar-apple rust. Additionally, cedar-hawthorn rust produces slightly smaller, more flattened galls on the juniper hosts.

Control strategies are essentially the same as for cedar-apple rust. Hawthorns with reported resistance include English hawthorn, Cockspur thorn, yellow-fruited thorn, *Crataegus intricata*, and *C. pruinosa*.

D. FIRE BLIGHT-

Fire blight, caused by the bacterium *Erwinia amylovora*, is the most devastating disease of crabapple. Fortunately, this disease is only an occasional problem and when it does occur, it is often isolated to specific geographical locations. However, when infection does occur, the disease can develop quite rapidly and can destroy individual trees in a single season. The bacteria survive the winter in old cankers on crabapples and other plant hosts and in healthy buds. As weather becomes favorable for growth in spring, the bacteria begin to rapidly multiply and can be seen oozing out of tissues. This creamy bacterial ooze is attractive to insects and they pick it up and carry it to open flower buds where infection occurs. The bacteria are also carried by wind and rain to open blossoms. Infected tissues are characterized by their blackened, “burned” appearance, hence the name “fire blight”.

The most effective method for control of this disease is to select and plant crabapple varieties which are resistant to fire blight. These include: Adams, Callaway, David, Dolgo, Harvest Gold, Indian Summer, Jewelberry, Liset, Profusion, Red Baron, Selkirk, and Sentinel. Sanitation is also a **very** important aspect of control. Any cankered or infected branches or twigs should be cut back to healthy wood during the dormant season. All pruning cuts should be made at least 8-12 inches below visible symptoms. All tools should be disinfested with 10% household bleach (1 part bleach: 9 parts water) or 70% alcohol. Prunings should be removed from the vicinity of the tree. The effects of this disease can also be minimized by maintaining overall tree health by following proper cultural practices that avoid excessive vigor. It is especially important to avoid heavy applications of nitrogen in spring.

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