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Fire Blight

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Fire blight is a bacterial disease that is particularly destructive on many varieties of apple and pear. It may also damage certain ornamental plants, such as flowering crabapple, hawthorn, mountain ash, cotoneaster, pyracantha, and spirea. If not controlled, fire blight can destroy the blossoms and fruit and may damage or kill the plant by stem infection.

Symptoms: Fire blight usually first appears during bloom. The blossom clusters wilt and turn dark brown or black. This is followed by twig blight infection of the current season's growth. The most obvious symptom of twig blight is a scorched appearance of affected stems in which the leaves wilt, turn brown and cling to the stem. It is this stage that gives the disease the name "Fire Blight." Often the tips of blighted twigs have a crooked appearance resembling a fish hook. Fire blight may continue to spread downward from the blighted twigs into main scaffolding limbs and trunk. The outer bark of infected branches becomes shriveled, while the inner bark appears water-soaked and reddish-brown.

There is usually a distinct separation of the infected (cankered) and healthy tissue. The cankered areas are often slightly sunken and have a darker appearance than that of adjacent healthy bark tissue.

Cause: Fire blight is caused by the bacterium, Erwinia amylovora. The bacteria overwinter in cankered limbs, and in spring,
droplets of sticky, amber-colored ooze form from these cankers. These droplets contain large numbers of bacteria. Insects and spattering rain carry the bacteria from the droplets to blossoms and twigs. More fire blight bacteria ooze from these new infections, and insects and rain again carry them to new areas of the tree and orchard. Fire blight is most damaging in years when spring temperatures are above normal with frequent rains. During cool springs the blossoms blight phase is usually not significant.

Control: No single practice can insure complete control of fire blight. However, you can reduce the disease if you employ a combination of both cultural and chemical control measures as outlined below.

Sanitation: Fire blight-infected limbs and branches should be pruned during late winter when there is much less chance of spreading fire blight bacteria on cutting tools. However, often it is necessary to make immediate cuts to prevent the disease from going into the main framework of the tree. This is especially critical on young trees with diseased branches attached to the main trunk. Use great caution when pruning infected limbs during spring or summer. Cut 8 to 12 inches below the diseased tissue and, most important, sterilize cutting tools between each cut. A 70 per cent denatured alcohol solution, made by mixing 3 volumes of denatured alcohol with 1 volume of water, is recommended for sterilizing cutting tools. A 10 per cent solution of liquid laundry bleach (sodium hypochlorite) can also be used, but this preparation is corrosive to most pruning tools. If it is used, the tools should be thoroughly rinsed and oiled after cutting.

Chemical control: The most effective chemical control of fire blight is achieved by the application of streptomycin* during bloom. Because blossoms open over a period of several days, 3 to 4 applications during bloom are necessary. Apply the first bloom spray shortly after the first blossoms open. A second spray is applied when about half of the blossoms that were not open during the first spray do open. A third spray should be applied when the remaining blossoms open (full bloom). Additional sprays may be needed if the bloom period is unusually long. The effectiveness of streptomycin after bloom is of questionable value; however, it is labeled for use up to 50 days prior to harvest for apples and 30 days for pears. Where streptomycin is not labeled for use on a particular plant, Bordeaux mixture (1-2-100)** may be substituted for streptomycin, according to label instructions.

Dormant sprays of either copper sulfate (4 lb. per 100 gal. water) or Bordeaux mixture (8-8-100) plus 1 gallon Superior spray oil will help prevent season buildup of the fire blight bacterium. Apply dormant sprays about 2 weeks before bud break, and repeat the spray 7-10 days later.

Cultural practices: There is added danger of severe fire blight infection when an excessive amount of new growth occurs. Rapidly growing, succulent twigs which have been stimulated by excessive fertility or heavy pruning are extremely susceptible to the fire blight bacteria. Therefore, it is best to use either manure or balanced fertilizers with fairly low nitrogen content for moderate growth.

Remove suckers which develop on the trunk or main scaffolding limbs, since they are also very susceptible to fire blight infection.

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*Streptomycin is an antibiotic antibiotic sold commercially for plant use as Agrimycin 17, Stauffer Streptomycin, Phytoycin, Ortho Streptomycin Spray, and Streptomycin Antibiotic Spray Powder. Agri-Strap, and Ag-Srap. Use only for those plants listed on container labels at label rates.

**Bordeaux mixture is a combination of copper sulfate and hydrated lime. These two chemicals are combined with water in various ratios such as 4-4-100 (4 lb. of copper sulfate, 4 lb. of hydrated lime and 100 gallons of water). Use fresh spray lime when preparing Bordeaux mixture to insure maximum effectiveness. Mixing instructions: Add lime to cold water in the amount of 1/2 to 3/4 of the total volume desired for the final spray, mix thoroughly; add dissolved copper sulfate and mix thoroughly; add cold water to bring up to final volume. Strain out flakes that might develop in the mixture.