

Forest Pest Bulletin



SOUTH DAKOTA
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FIRE BLIGHT OF APPLE AND PEAR

CAUSAL AGENT

The bacterium *Erwinia amylovora* (Burr.) Winsl.

HOSTS

The following tree and shrub species are most commonly affected: apple (*Malus* spp.), pear (*Pyrus* spp.), cotoneaster (*Cotoneaster* spp.), hawthorns (*Crataegus* spp.), mountain-ashes (*Sorbus* spp.). It may occasionally cause disease on cherries and plums (*Prunus* spp.), roses (*Rosa* spp.), raspberries (*Rubus* spp.) and serviceberry (*Amelanchier* spp.).

SYMPTOMS

Affected leaves, twigs and branches appear, as the name fire blight implies, as if scorched by fire (Fig. 1). Leaves near growing tips first appear water-soaked, then wilt, turn brownish to black, and remain on the tree. Flowers can also be affected, appearing discolored and water-soaked, then browning and collapsing. Twigs and small branches are blighted, also forming a curled tip referred to as a shepherd's crook. On some tree species the bacterium advances down to older branches, causing dark, sunken cankers (Fig. 2). Cankers can be identified by a sunken area on the branches and trunks. Infection may spread to the roots, killing the bark in the same manner as bark on the trunk.



Figure 1. Appearance of blighted apple leaves.
University of Georgia Plant Pathology Archive,
www.forestryimages.org

LIFE CYCLE

E. amylovora overwinters in tissue adjacent to the margins of cankers on twigs and branches. The pathogen is more likely to overwinter successfully in branches or trunks between ¼ - 1 ½ inch diameter with cankers having smooth margins and healthy tissue on all sides. In the spring, once temperatures are above 65F and rains begin, cankers discharge a yellow to orange-colored bacterial ooze that is attractive to bees, flies and other insect pollinators. These insects transmit bacteria within the ooze to blossoms and leaves. Rain splash, strong winds, and contaminated pruning tools can also spread bacteria from

oozing cankers. The pathogen is often carried by insects to blossoms where the disease moves readily into adjacent twigs or to wounds created by hail or other mechanical injury. The bacteria rapidly multiply in the flowers and are spread further within the tree from flower to flower by bees. Thus a tree can be completely infected within one year. The disease may also enter the plant through the natural opening in leaves and twigs. The disease can move into branches causing cankers that girdle and kill the afflicted branches and eventually progress down the branches to the trunk. Without control measures, the tree may eventually be lost.



Figure 2. Fireblight canker on trunk of apple.

University of Georgia Plant Pathology Archive, Bugwood.org

CONTROL

A sanitation and spraying program needs to take place in order to reduce fireblight. However, it's not completely curable. First, if you have severe fireblight in the area, avoid planting any susceptible apple or pear cultivars. Second, on infected trees you already have prune and remove any twigs and branches with cankers. Cankers may initially appear as dark, slightly sunken areas with a thin ridge line surrounding the canker. The inner bark beneath the canker may be a light to dark brown. Cut branches one foot beyond the canker but at a branch or trunk collar, do not leave a stub. Be sure to sanitize our pruning tools by soaking them for one minute between cuts in a household bleach solution of one part bleach: nine parts water or household disinfectant such as Lysol. The bleach solution can be corrosive to tools and can injure the plant so be sure the pruning tool is dry before making a cut and the tool is cleaned and oiled at the completion of the work. Third, avoid heavy nitrogen fertilization as this can stimulate growth, rather than disease resistance. Fourth, apply Bordeaux mixtures or other fixed copper fungicides as late dormant season spray, just before bud break. These treatments provide some, though limited, control of fireblight. The fixed copper spray may also be applied as the flowers fade and repeat once a week for five weeks but only on certain hosts. Bordeaux mixtures and copper fungicides can injure plums, crabapples and some other trees if applied at bud break or later. Some apple and pear cultivars may have their leaves turn brown or russetting of the fruit from growing season applications of copper fungicides so test on a branch or two before treating the entire tree. Streptomycin sprays can be used to manage fire blight but are typically labeled for fruit orchards rather than use for ornamental trees in residential settings.

Due to numerous pesticide labels and/or label changes, be sure the product label includes the intended use prior to purchase or use. Please read and follow all pesticide label instructions and wear the protective equipment required. Spraying pesticides overhead increases the risk of exposure to the applicator and increases the likelihood of drift to non-target areas. Consider the use of a commercial applicator when spraying large trees due to the added risk of exposure and equipment needs. The mention of a specific product name does not constitute endorsement of that product by the South Dakota Department of Agriculture.

For further information contact your nearest South Dakota Division of Resource Conservation and Forestry office. Hot Springs 605-745-5820; Huron 605-353-7187; Lead 605-584-2300; Mitchell 605-995-8189; Pierre 605-773-3623; Rapid City 605-394-2395; Sioux Falls 605-362-2830; Watertown 605-882-5367.

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