

LOUISIANA PLANT PATHOLOGY

DISEASE IDENTIFICATION AND MANAGEMENT SERIES

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Fire Blight

Erwinia amylovora (Burrill) Winslow et al.

Fire blight is a common disease of certain members of the pome fruit subgroup of the rose family, including apple, crabapple, pear (both fruiting and ornamental), quince, loquat, mayhaw, hawthorn, Indian hawthorn, Cotoneaster and Pyracantha. This disease is caused by the bacterium, *Erwinia amylovora*.

The bacteria overwinter in cankers from the previous year's infections, and the same environmental conditions that stimulate the renewed growth of the host plants in the spring also stimulate growth of the bacteria. The first evidence of bacterial activity is the presence of a watery exudate coming from previously infected plant tissues. This exudate contains both actively growing bacteria and sugar that attracts a variety of insects. The bacteria can then be dispersed to nearby blossoms or tender young shoot tips either by splashing water or by insects, especially honeybees. The bacteria then enter the plant through wounds or natural openings, such as nectarthodes.

Disease develops most rapidly during periods of humid or rainy weather when temperatures range from a low of 55 F at night to a high of 75-85 F during the day.

Infected flowers and flower stems wilt and turn black or brown. The bacteria then move from the infected flowers into twigs and branches – causing small shoots to wilt and form the characteristic “shepherd’s crook” at the ends of the infected shoots. These eventually die and turn black, but the dead, blackened leaves remain attached to branches throughout the season, giving the tree the scorched appearance that gives the disease its name. As the bacteria move from the infected blossoms into the adjacent woody tissues, the wood develops reddish-colored streaks beneath the bark. Growth of the bacteria can be quite extensive in susceptible hosts



Fig. 1. Fire blight of ornamental pear. (Photo by Carol Pinnell-Alison)



Fig. 2. Early symptoms of fire blight on ornamental pear. (Photo by D. Ferrin)

and it often extends a considerable distance beyond the obviously diseased tissues.

The management of fire blight requires the use of a combination of disease management practices, since no single practice is sufficient to control this disease. In areas where fire blight is common, choose only resistant varieties when establishing new plantings, but remember resistance is not the same as immunity. Disease can still develop on these varieties to some extent. Once the plants are established, employ cultural practices that promote a vigorous plant to reduce the damage caused by this disease. Keep in mind, however, that overfertilization and overwatering tend to promote lush, succulent growth that is susceptible to disease. The natural resistance of the plants can be further enhanced by applications of fosetyl alu-

minum (Aliette) or one of the phosphite fungicides. Careful pruning to remove infected branches also will help to reduce the amount of inoculum present in the spring. When pruning, be sure to cut back far enough into healthy tissue to ensure infected tissues are removed completely. Also be sure to clean and disinfest cutting tools frequently using a 10-percent-bleach solution (or other suitable disinfectant) to prevent the accidental spread of the bacterium. A weak solution of a copper fungicide may be applied during the bloom period to reduce infection of the flowers, but such applications must be made every 4-5 days during the bloom period to be even moderately successful. As an alternative, streptomycin sulfate may be used, but repeated use of this antibiotic eventually will lead to the development of resistance in the bacterial population.



Fig. 3. Characteristic "shepherd's crook" on blighted ornamental pear shoot. (Photo by Carol Pinnell-Alison)

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