

Fire blight in fruit crops

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Causal agent: *Erwinia amylovora* - bacterium

Hosts:

- Many fruit tree species, most harmful on pome fruits – pear, quince, apple, medlar;
- Hosts are susceptible to the disease until the end of the vegetation period, when the multiplication of the bacterium declines and canker formation is observed;
- Gradually, a large part of the bacteria die, and the remaining living ones are located at the boundary between diseased and healthy tissue. From them, in the following year, the development of the causal agent is renewed.

Symptoms:

- Young shoots bent in a hook shape from the tip downwards and dried,

as well as branches with dried leaves and fruits;

- Diseased leaves are rolled like funnels and remain on

the tree even after leaf fall;

- The final stage of the disease is drying of entire trees which, due to the presence of unfallen flowers, leaves and fruitlets, have a scorched appearance;
- The first damage on fruit-bearing trees is observed in spring, during flowering and immediately afterwards;
- Diseased flowers and their pedicels turn brown, dry out and in most cases remain attached;
- Necrosis rapidly affects the neighbouring flowers from the side of the pedicels and the adjacent shoots;
- In warm and humid weather the infected parts are covered with droplets of exudate;
- In pear and quince the necrotic areas turn black, while in apple and medlar they are dark brown;
- On twigs, scaffold branches and trunks cankers are formed. Around the damaged area the bark cracks and turns yellow.

Life cycle

The bacterium overwinters in the cankers formed on the trunks, branches and twigs of the trees. In spring, bacterial exudate forms on the cankers, which is spread by:

- Pruning tools;
- Rain, wind, hail, birds, insects by mechanical means;
- Bees during pollination, with the bacterium entering the plant through the nectary.

Over long distances the bacterium is spread through planting material and scions from diseased plants.

Control:

During the dormant period, until bud swelling, it is necessary to carry out:

- Pruning of infected branches 50–70 cm below the boundary between diseased and healthy tissue. The infected branches are collected and burned;

- Uprooting and burning of heavily infected trees;
- Pruning of healthy trees is carried out before that of diseased trees;
- After each cut the tools are disinfected with a 10% bleach solution, 2% formalin or denatured alcohol diluted with water at 1:3 for 2–3 minutes;
- The wounds are coated with white latex paint with the addition of a 1% solution of a copper fungicide;
- When performing pruning during tree dormancy, large wounds, which are potential entry points for the pathogen and stimulate vigorous growth, should not be exposed;
- Pruning in spring in the presence of sap flow represents a serious risk for spreading the infection with the tools and, for the same reason, in summer such intervention is undertaken only in cases of extreme necessity;
- Maintaining an optimal N-P-K balance, avoiding excess nitrogen. Early spring nitrogen fertilization should be split, with half of the required amount applied one month before the start of growth and the other half after petal fall;
- Before bud burst, a late spray should be carried out with 2% Bordeaux mixture or other copper-containing fungicides;
- Planting material should not be purchased and scions should not be taken from areas where the disease is widespread. Only healthy planting material should be used. Resistant cultivars should be selected;
- During the vegetation period monitoring must be carried out and, upon detection of sources of secondary infection, they should be removed immediately with disinfected tools
- Among chemical means, the best results are achieved with copper-containing products. Between 4 and 8 sprays are carried out during periods when conditions for disease development (temperature and moisture) are favourable. Particularly important are the preventive sprays during flowering and after hail, when the bacterium most easily penetrates plant tissues.