

Preventing Fire Blight in New Apple Plantings

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The prevention of fire blight in new apple plantings depends on several critical factors. The neglecting of any of these can significantly increase the risk of damaging fire blight in new plantings. These factors are use of resistant varieties and rootstocks, planting disease-free nursery trees, reducing blossom blight and shoot blight, and removal of infected plant parts.

The selection of resistant fruiting varieties and rootstocks is complicated by the fact that the newer, high-value varieties are all susceptible to fire blight. However there are now some good resistant rootstocks available, and more will be available in the next few years. B.9 and the Geneva rootstocks (Table 1) are the best choices for fire blight resistant alternatives to M.9 and M.26, which are both very susceptible. Only some of the Geneva rootstocks are available at this time, although others will become more available in the next few years. Only those rootstocks available now or soon to be available are shown in Table 1. The Geneva apple rootstock breeding program, a joint venture of the USDA-ARS and Cornell University, is continuing very actively and is continuously selecting improved rootstocks that will be released in future years. Fire blight resistance is a consistent characteristic of all the Geneva rootstocks.

Only disease-free nursery trees should be planted. It is safer to buy trees from nurseries with no history of fire blight infections, and from areas where streptomycin-resistant fire blight bacteria are not present. Trees should be carefully inspected for fire blight infections BEFORE being planted. Infected trees should not be planted.

Blossom infection of newly planted trees should be prevented by removal of flowers as soon as they appear and before they open. Removal of flowers should be done in dry weather. If flowers are not removed, they should be protected by preventive sprays when fire blight infection is forecast. Preventive applications of copper may also be made at two week intervals, which will have the additional benefit of inhibiting shoot infections.

Shoot infections should be minimized by careful management of fertility, especially avoiding excessive nitrogen or late applications. Any tree training techniques should be applied only during dry weather. Insect pests especially potato leafhoppers should be monitored and controlled.

If extensive fire blight develops in a newly planted orchard (Fig. 1), it may be more cost effective to remove the planting than to attempt to control the disease by pruning or selective rogueing. Oftentimes the internal infection will have progressed ahead of the visible damage,

and will reappear after pruning. Chemical applications will not stop such an internal infection. Removal is more warranted if a susceptible rootstock (M.9 or M.26) has been used. In the case of a resistant rootstock (B.9 or a Geneva rootstock), the base of the scion might be saved, or the resistant rootstock could be re-budded.



Fig. 1. Newly planted Topaz apple orchard with 90% of trees infected with fire blight.

Preventing introduction of streptomycin-resistant fire blight bacteria into New York. New York is lucky so far in being able to continue to use streptomycin effectively because step-resistant strains are not yet present in the state. Already one documented incident of step-resistant strains coming into NY on nursery trees was solved by prompt attention by extension, researchers, and the grower. If suspicious infections are seen on newly planted trees, they should be reported promptly to CCE, who will arrange for strep-resistance testing in the lab at Geneva.

Avoiding fire blight in 2-yr-old and older trees. Besides routine measures to control blossom and shoot infections by use of forecasting systems (MARYBLYT, CougarBlight) and appropriate preventive sprays (streptomycin, copper, Apogee), particular care must be taken to avoid infection of the rootstock since this is almost always fatal to the whole tree. Use of a resistant rootstock will avoid this problem. But for trees on M.9 or M.26, extra attention must be paid to controlling blossom blight, since internal infections from blighted flowers are the most dangerous source for infection of the rootstock. However internal infections can also result from shoot infections and result in infection of the rootstock. Borer damage to the rootstock shank has also been implicated in rootstock infection, making control of borers in young trees a high priority.