

FACT SHEET

National Clean Plant Network



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Little Cherry Disease

What is little cherry?

Little cherry disease and X-disease are impacting the sweet cherry industry at epidemic levels across Washington State and northern Oregon. These two diseases are caused by Little cherry virus 1 (LChV-1), Little cherry virus 2 (LChV-2), or the X-disease phytoplasma (*Candidatus Phytoplasma pruni*), respectively. In Washington, LChV-2 and X-disease phytoplasma are the major causes of small cherry symptoms in commercial cherry. The X-disease phytoplasma is widespread throughout cherry and peach producing areas in North America, causing significant crop loss in some areas of California.

When was it found?

This is not a new problem. The first major outbreak of little cherry-like disease occurred in the Kootenay Valley in Canada in the 1930s that devastated the Canadian cherry industry. In Washington State the last major epidemic occurred from the late 1940s to the 1950s and has recently resurged. X-disease was first reported in sweet cherry in California in the 1930s, then identified as the same pathogen devastating peach trees in Connecticut several years later. It was first identified in cherry trees of Washington State in 1946.

What are the symptoms?

As the name would suggest, these pathogens produce small, undersized cherries, with poor color development and flavor. Disease development occurs over several years, and severity of the disease is influenced by cultivar, climate, and rootstock. Infection of sweet cherry with LChV-1 and -2 results in small fruit with reduced sugar content with little or no flavor. Tree size and vigor are not significantly affected, and there are no reliable foliar symptoms. In contrast to the effects of the two viruses, where fruit have a bitter flavor, fruit from X-disease infected trees generally have a bland taste due to the reduction in sugar content. In addition to fruit symptoms, trees infected with X-disease will have reduced growth and extension of infected limbs, sometimes leading to crowding of leaves into dense clusters and eventual dieback.

What is the host range?

The host range of LChV-1 and -2 is limited to sweet cherry

(*Prunus Avium*), sour cherry (*P. cerasus*) and ornamental flowering cherries. The X-disease phytoplasma host range includes most *Prunus* species, as well as many weed hosts.

How does it spread?

All three pathogens are spread by grafting and propagation, including root grafting between neighboring trees. LChV-2 is also transmitted by the apple (*Phenacoccus aceris*) and grape (*Pseudococcus maritimus*) mealybugs. There is no known insect vector for LChV-1. The X-disease phytoplasma is vectored by several leafhopper species, including *Colladonus montanus*, *C. reductus*, and *Fieberiella florii*.

How is it controlled?

The best control strategy is prevention by using planting material derived from clean, foundation plant stock free of little cherry pathogens. Once infection is confirmed in an orchard, removal of infected trees is the only way to reduce the spread and impact of this disease. Since the pathogens can survive in living plant tissue, it is critical to kill or remove cherry roots to stop re-infection from occurring when new young trees root graft with infected plant roots. Replace-



Severe Little cherry virus-2 symptoms on Bing sweet cherry at harvest; note the smaller, pointed fruit, and variable color from mottled pink to yellow (rather than red).

ment trees must be obtained from virus-tested planting stock. Vectors of the pathogens should be controlled by biological and chemical controls. For X-disease phytoplasma, it is also important to control alternate broadleaf weed hosts.

How can I get my trees tested?

The little cherry viruses and X-disease phytoplasma are detected by molecular laboratory tests. If you observe little cherry-like symptoms and would like to get a confirmed diagnosis, several disease diagnostic laboratories offer testing services.

To sample a suspect tree for testing, collect four 6-inch long stem cuttings of the current year's growth from around the tree, with the leaves and fruit stems (pedicel) attached (if available). If possible, sample from branches that have symptomatic fruit. These tissues are good for testing for the two viruses, and the X-disease phytoplasma. Place the cuttings in labelled plastic bags with a piece of moist paper towel, inside a cooler with a cold pack to keep the samples refrigerated and ship to the lab of your choice.

Where can I find pathogen-tested materials?

The National Clean Plant Network (NCPN) Fruit Tree Centers maintain and distribute commercially important scion and rootstock cultivars as part of state certification programs. All material distributed by NCPN centers have been tested for these pathogens and serve as the source material for commercial nursery production. Obtaining certified pathogen tested material from a clean plant center or a certified nursery is the best first step in ensuring a healthy productive crop.

References:

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Symptomatic Bing cherry infected with X-disease phytoplasma, showing smaller, misshapen fruit, with mottled pink to yellow color, and in some cases, a red line down the suture.



A Bing sweet cherry tree showing severe dieback symptoms on all limbs, typical of late-stage X-disease phytoplasma infection.



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June 2020