



# Factsheet

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Prepared by the University of Massachusetts Fruit Team

## *Blueberry Scorch Virus (BlScV)*

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Blueberry scorch virus is a problematic virus for blueberry growers in New Jersey, Oregon, Washington, and British Columbia. Previously unreported in New England, blueberry plants from fields in Connecticut and Massachusetts have recently tested positive for blueberry scorch virus. At present, the virus has only been identified in limited areas in each state; however, it is likely that the virus is present in additional areas in New England.

### Causal Agent

- A collection of strains of the blueberry scorch carlavirus (BlScV) is responsible for blueberry scorch, and cultivar response to infection varies depending which strain infects the plant.
  - At least one 'west-coast' strain is associated with blueberry scorch in Washington, Oregon, and a small percentage of the scorch-affected plants in British Columbia.
  - At least two 'New Jersey' strains are associated with blueberry scorch in New Jersey (referred to as Sheep Pen Hill disease when first reported in the 1980s), and the recent reports of blueberry scorch in New England and British Columbia.

### Plants Affected

- In commercial plantings, scorch symptoms have only been observed on northern highbush plants.
- Samples of rabbiteye and southern highbush blueberry plants have tested positive for BlScV, although it is unclear whether these particular plants exhibited scorch symptoms in the field.

- BScV has not been reported to occur in lowbush blueberry.
- Symptomless cranberry plants of various cultivars have recently tested positive for BScV in British Columbia, Washington, and Oregon.
  - The source of BScV in cranberry is unclear. Some of the BScV-positive cranberry plants were adjacent to BScV-infected blueberry fields, while other BScV-positive cranberry plants were not adjacent to BScV-infected blueberry fields.
  - It is currently not known which strain of the virus is present in these BScV-positive cranberry plants, and cranberry plants have not yet been tested for the presence of BScV in New England or New Jersey.

### **Cultivar Response to Infection**

- Cultivar response to infection is BScV-strain dependent.
  - For the New Jersey strains:
    - All cultivars except Jersey will exhibit symptoms when infected. Jersey is tolerant to the New Jersey strains of BScV – the plants become infected but remain symptom-free.
    - Several cultivars, including Duke, Elliot, and Weymouth, are severely affected and exhibit blossom blight and stem dieback symptoms. Other cultivars (for example, Bluecrop) exhibit a less severe blossom blight and marginal chlorosis of the leaves.
  - For the west-coast strains:
    - When infected by the west-coast strain, cultivars will show blossom and twig dieback, or marginal chlorosis of the leaves, or both of these symptoms.
    - Numerous cultivars are tolerant to the west-coast strain. Plants that remained symptom-free after infection by the west-coast strain include the cultivars:

Bluechip	Ivanhoe	Puru
Bluecrop	Lateblue	Rancocas
Bluegold	Nelson	Reka
Bluetta	Northblue	Sierra
Burlington	Northcountry	Sunrise
Concord	Northsky	Toro
Coville	Nui	Washington
Duke	O’Neal	1613-A (Hardibblue)

## Symptoms

- Although cultivars respond differently to the various strains of BScV, the symptoms of blueberry scorch caused by the west-coast strain and the New Jersey strains are similar. One exception is that plants infected with the New Jersey strains often show a distinct line pattern on the leaves in the late season (Figure 1).



Figure 1. Line pattern observed on leaf infected with New Jersey stain of BScV. Courtesy A. W. Stretch. Reprinted from Compendium of Blueberry and Cranberry Diseases. F. L. Caruso and D. C. Ramsdell, eds. American Phytopathological Society, St. Paul, MN.

- In severe cases, scorch can cause complete flower blight and a twig blight of young shoots (Figures 2-3). Flower symptoms occur soon after the corolla opens, and the blighted flowers are at first brown then bleach to gray over time, and the affected flowers are often retained throughout the season. A summer flush of growth can occur on blighted twigs, giving the false appearance of a recovered plant.



Figures 2 and 3. Blossom and twig blight symptoms of BScV. Figure 2 (left) courtesy of P.R. Bristow and Figure 3 (right) courtesy of P.V. Oudemans.

- In less severe cases the leaves may show marginal chlorosis or necrosis (Figures 4-5).



Figure 4. Marginal chlorosis symptoms of B1ScV. Courtesy of P.R. Bristow.



Figure 5. Leaf blight, flower blight, and marginal chlorosis symptoms of B1ScV. Courtesy of P.R. Bristow.

- For the cultivars that exhibit symptoms, plant health and productivity will continue to decline each year. However, the severity of the symptoms can vary year to year.
- Some varieties remain symptomless when infected, as listed above.
- Symptoms of scorch can often be confused with herbicide injury, frost injury, mummy berry blossom blight, or Botrytis blossom blight.

### **Disease Cycle and Epidemiology**

- An infected the plant typically develops symptoms 1-2 years after infection.
- Aphid vectors, primarily *Ericaphis fimbriata* (previously referred to as *Fimbriaphis fimbriata*), vector the virus in a non-persistent fashion. Transmission of the virus by the aphid vector

occurs from spring to late summer. B1ScV can spread rapidly from the infection focus when aphid populations remain unchecked.

- Transmission of B1ScV can also occur through propagation via an infected mother plant, and B1ScV is also graft transmissible. Although B1ScV has been mechanically transmitted from infected blueberries to various plants including *Nicotiana occidentalis*, *Solanum tuberosum*, *Gomphrena globosa*, *Lyonia mariana* and species of *Chenopodium*, there is no evidence to support that mechanical transmission occurs in blueberry.
- The numerous tolerant cultivars and other symptomless hosts can function as reservoirs of B1ScV. Additionally, infected plants not yet showing symptoms can also serve as a reservoir for the virus. The virus can be spread from these infected and symptomless plants to healthy and susceptible plants via the aphid vector or propagation.

## **Management**

- Prevent the introduction of the virus by planting certified virus-free stock.
- When scorch-like symptoms are observed, consider and eliminate the possibility diseases and injuries such as mummy berry, Botrytis blossom blight, frost injury, and herbicide injury which often cause symptoms similar to those of scorch. For plants that are suspected to be infected with B1ScV, confirm the presence of the B1ScV virus with a serological test. Contact your local extension agent for recommendations.
- If caught early, a program of infected-bush identification and removal in addition to an aphid control program can prevent further spread of the disease.
  - Treatments to control the aphid vector should be applied when aphids are first evident in the crown of the plants, and subsequent applications throughout the season may be necessary to keep the aphid population low. It is most effective to direct aphid control treatments at the egg stage or first-generation aphids in the early spring, since adequate coverage is difficult to achieve during the summer months due to the dense leaf canopy. Contact your local extension agent for recommendations for appropriate treatments.
- If tolerant, or symptomless, plants are planted at close proximity to the infected plants, serological tests should be conducted to identify infected bushes for removal. If these infected, symptomless plants are not removed they will serve as a continual source of inoculum for susceptible bushes.

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