

Pest Alert and Fact Sheet

Blueberry Scorch Virus



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Blueberry scorch virus (BISV) was first observed in a Berkeley blueberry planting near Puyallup, Washington in 1980 and has been observed in western Oregon and Washington (near Puyallup and in Clark County), but not northern Washington or in the Fraser River Valley of British Columbia. A recent outbreak of BISV with more severe symptoms was reported in British Columbia in the summer of 2000. Based on symptoms, it closely resembles the New Jersey strain of BISV, known as 'Sheep Pen Hill Disease'. This disease has the potential to have a devastating effect on blueberry production in the western Oregon and Washington production areas. The New Jersey strain of BISV causes symptoms in all cultivars except 'Jersey', whereas the West Coast strain is symptomless in 'Bluecrop' and 'Duke' as well as several other cultivars (Table 1).

Since BISV was found in all the blueberry production areas of BC, all planting material from BC should be considered suspect and potentially infected with the virus. **It is advised that growers not bring blueberry plants down from BC until they have an established certification program in place to ensure virus-free planting stocks.**

Symptoms

The symptoms of scorch on infected plants range from complete browning of the flowers and some of the leaves leading to eventual death of the infected bushes to cultivars that are completely symptomless. The cultivars that remain symptomless do carry the disease and serve as a source of inoculum for infection of other bushes. There can be a 1 to 2 year latent period after infection before a bush shows symptoms. Thus, inspection can not be counted on to ensure plant health. The flowers on the infected plants turn brown and fade to a greyish color before they fall off the plants. With the West Coast strain of BISV, the dried flowers can be retained on the bush for more

than a year. Flowers are not retained on the bush with the New Jersey strain. However, it is not clear at this time if flower retention is strictly strain dependent or if environmental conditions play a role. The disease starts on 1 or 2 branches before it spreads throughout the bush. The symptoms of the disease are expressed in infected plants every year and plants do not recover as they do when infected with blueberry shock virus. Production drops off rapidly and the need for replanting soon becomes evident.

Fig. 1 Close up of BISV infected 'Berkeley'



Showing flower and tip necrosis

Fig. 2. Infected bush of 'Berkeley' with BISV



flanked by healthy bushes

Causal Organism and Disease Cycle

The virus is spread from one geographic location to another over long distances through infected planting stock. It is a member of the Carlavirus group of plant viruses that are spread by aphids feeding on infected plants, picking up the virus on their mouth parts, and then moving to a new location and feeding on another plant. In the process of feeding, the virus is transmitted to uninfected bushes. The rate of spread through a planting is rapid depending upon the number of aphids available to spread the virus. Aphid transmission occurs over relatively short distances, (less than a mile). There is evidence to show that most of the infection occurs from mid-April to early August with the West Coast strain.

A cooperative research program between the USDA-ARS; Washington State University; BC Ministry of Agriculture, Fisheries and Food; and Agri-Food Canada is being undertaken during 2001 to obtain more information on the management of this disease in the Pacific Northwest.

Cultural Control

In order to reduce the potential detrimental impact of BISV on blueberry plantings in the Pacific Northwest region, the following recommendations are made:

1. For any new planting of bushes, obtain the plants from local reputable nurseries who grow quality plants and have a virus testing program in place. Ask for documentation.
2. Buy plants that were propagated from mother plants grown in BISV-free areas (at least ten miles from any known infected bushes).
3. Have the plants tested for the presence of BISV before planting any new acreage for commercial production.
4. If plants are found infected with BISV, remove them from the planting immediately and initiate an aphid-control program for two years, removing any new plants that develop symptoms.
5. Replant with virus-tested plants, preferably plants that are tolerant of BISV.
6. Apply sound integrated pest management strategies to control populations of potential insect vectors.

Table 1. Reaction of blueberry cultivars to BISV. All cultivars can be infected.

Reaction	West Coast Strains	East Coast
Symptomless	Bluechip, Bluecrop, Bluegold, Bluetta, Burlington, Concord, Coville, Duke, Ivanhoe, Lateblue, Nelson, Northblue, Northcountry, Northsky, Nui, O'Neal, Puru, Rancocas, Reka, Sierra, Sunrise, Toro, Washington, 1613-A (Hardibblue), U-254	Jersey
Marginal Chlorosis	Olympia, Stanley, Washington, N51G (Eberhardt)	
Flower and Leaf Necrosis, and General plant decline	Atlantic, Berkeley, Bluehaven, Bluejay, Blueray, Collins, Darrow, Dixi, Earliblue, Elizabeth, Elliott, Gem, Herbert, Jersey, Meader, Northland, Pemberton, Rubel, Spartan, Weymouth	All Others

The only cultivar with known tolerance to the New Jersey strain of BISV is 'Jersey'



Fig. 3. Chlorosis on margins of mature leaves from bushes infected with BISV

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For more information...

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