CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

# California Pest Rating Profile for

## Plum Pox Virus

## Sharka Disease

## Pest Rating: A

Kingdom: Viruses and viroids, Category: Riboviria, Category: Orthornavirae, Phylum: Pisuviricota, Class: Stelpaviricetes, Order: Patatavirales, Family: Potyviridae

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**Comment Period: 04/16/2026 through 05/31/2026**

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## Initiating Event:

This pathogen has not been through the pest rating process. The risk to California from Plum pox virus (also called *Potyvirus plumpoxi)* is described herein, and a permanent rating is proposed.

## History & Status:

**Background:**

California is the leading U.S. producer of stone fruit (*Prunus* spp.), supplying 99% of nectarines, 95% of apricots and plums, and 70% of peaches with a value approaching $2 billion annually (CDFA Ag Stats). Hundreds of stone fruit varieties are grown, mainly in the San Joaquin Valley, and shipped across the country and around the world. Stone fruits are also very important in home orchards, and there are ornamental varieties spread across urban landscapes. Almonds are also *Prunus* and are susceptible to infection but have not been an economic host in other areas.

Plum pox virus (PPV), causing sharka disease, is the most devastating viral disease of *Prunus* species worldwide, causing massive economic losses and reducing fruit quality. Transmitted by aphids and grafting, it is a high-priority, regulated pathogen that has rapidly and destructively spread across Europe, Asia, and the Americas. PPV is listed among the top ten plant viruses in terms of scientific and economic importance, also among the best studied potyviruses for plant–virus interactions.

PPV is in one of the largest families of plant viruses, the Potyviridae, also containing many of the most economically significant viruses for agriculture (Sholthof et al., 2011). The virus particles are flexuous filamentous rods. The genome of PPV consists of single-stranded RNA of positive polarity (García and

Cambra, 2007). Worldwide, there are nine recognized strains of PPV: D, M, Rec, EA, W, T, C, CR, and An. The most widespread strains are PPV-D (present in all countries where the disease has been detected), PPV-M (detected in Europe and Asia) and PPV-Rec, which is present in most European countries (García et al., 2025 ). The disease was detected in the U.S. in Pennsylvania in 1999, and in New York and Michigan in 2006. Following extensive surveying and destruction of trees, it was successfully eradicated from the United States by the USDA in 2019.

PPV was originally on the USDA's select agent list. It was removed in 2005, but is still a regulated pathogen in the U.S. The quarantine status of plum pox creates trade restrictions, and phytosanitary laws have had to be established at international, national, and even at a local level for some jurisdictions costs associated with the disease involve not only direct losses in stone-fruit production, commercialization, eradication, compensatory measures and lost revenue, but also indirect costs including those from preventive measures such as quarantine, surveys, inspections, control of nurseries, diagnostics and the impact on foreign and domestic trade (Cambra et al., 2006; CABI, 2006).

*Hosts:* PPV infects a large number of cultivated plants used as commercial cultivars or rootstocks, ornamental and wild *Prunus* species, and very few resistance genes to the virus have been identified. More than fifty species of the genus *Prunus* and interspecific hybrids are natural or experimental hosts of PPV, including cultivated trees for fruit production, rootstocks, ornamentals, and wild species (García et al., 2025). However, PPV susceptibility varies widely between strains, species, and cultivars.

*Symptoms*: Disease symptoms and their intensity vary with *Prunus* spp. and cultivar, viral strain, and other biotic and abiotic factors. The incubation period for symptoms can range from a few months to years. Leaves of susceptible cultivars show yellowish-green rings, mosaic mottling, and, in peaches, vein clearing and severe distortion. Symptoms are pronounced earlier in the growing season and tend to disappear during the summer when temperatures are high. Infected fruit may show chlorotic spots or rings and may be irregularly shaped or severely distorted. Plums and apricots may show internal browning/necrosis of the flesh, and immature fruit may drop prematurely. In some peach cultivars and under certain conditions, petals may show discoloration, and ring spots may be observed on twigs during winter (Rimbaud et al., 2015). Infected apricots have typical pale ring spots on the stones.

*Transmission:* PPV is transmitted by grafting, and vegetative propagation of infected plant material. These routes are responsible for the efficient spread of the virus at both local and global scales. There is a high risk of spreading the disease when there is transport of plant material through poorly controlled commercial or illegal exchanges. Once introduced into a new area, PPV is spread in a non-persistent manner by numerous winged aphid species (Labonne et al., 1995). Insecticide sprays are generally ineffective in controlling virus spread. Trees growing along roadsides and in urban areas can act as reservoirs for the virus and infected plants may sometimes go unnoticed (CABI, 2026).

*Damage:* Plum pox virus causes enormous economic losses. In countries in which sharka is endemic, a high percentage of apricot and plum production has been lost because of the disease. It can cause up to 100% yield loss in the most susceptible cultivars as fruit is deformed or drops prematurely (Cambra et al., 2006). Because it is easily transmitted by aphids and by vegetative multiplication, once established in an area, the production of PPV-free plants becomes very difficult. The disease does not

kill infected trees, but if they are not removed, a permanent reservoir of PPV is created (Cambra et al., 2006; CABI, 2006). No direct economic losses to ornamental *Prunus* species have been associated with PPV infection. The major concern is that PPV-infected ornamental species may act as symptomatic or, even more dangerously, as symptomless reservoirs of PPV (James and Thompson, 2006).

**Worldwide Distribution**: Africa: Egypt, Tunisia. America: Argentina, Canada, Chile. Asia: China, India, Iran, Israel, Japan, Jordan, Kazakhstan, Pakistan, Syrian Arab Republic, Uzbekistan. Europe: Albania, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czechia, Denmark, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Moldova, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Spain, Switzerland, Turkey, Ukraine, United Kingdom (EPPO, 2026).

**Official Control***:* Plum pox virus is on the EPPO's A1 list for Azerbaijan, Brazil, Bahrain, Chile, Comite de Sanidad Vegetal del Cono Sur, Georgia, Inter-African Phytosanitary Council, Iran, Kazakhstan, Paraguay, Uruguay, and Uzbekistan; on the A2 list for Eurasian Economic Union, European Plant Protection Organization, Egypt, Russian Federation, Turkey, Ukraine; a Quarantine pest for Canada, China, Israel, Korea, Mexico, Morocco, New Zealand, Norway, Serbia, Tunisia, United States; and a regulated non-quarantine pest for Switzerland, and the United Kingdom.

It is on the USDA PCIT's harmful organisms list for Albania, Antarctica, Argentina, Australia, Azerbaijan, Brazil, Canada, Chile, China, Colombia, Ecuador, Egypt, Eurasian Customs Union, European Union, French Polynesia, Georgia, Guatemala, Holy See (Vatican City State), Honduras, Israel, Japan, Madagascar, Moldova, Monaco, Morocco, Namibia, Nauru, New Caledonia, Norway, Oman, Peru, North Macedonia, San Marino, Serbia, South Africa, Syrian Arab Republic, Taiwan, Tajikistan, Tunisia, Turkey, Turkmenistan, Venezuela, Ukraine, United Arab Emirates, Uruguay, Uzbekistan, Viet Nam (USDA PCIT, 2026).

**California Distribution:** none

**California Interceptions:** none

The risk that plum pox virus would pose to California is evaluated below.

## Consequences of Introduction:

1) **Climate/Host Interaction:** This disease is likely to establish wherever its hosts are grown. With a variety of aphid species able to act as vectors, they are also likely to be statewide.

   Evaluate if the pest would have suitable hosts and climate to establish in California.

   **Score**: **3**

   - Low (1) Not likely to establish in California; or likely to establish in very limited areas.
   - Medium (2) may be able to be established in a larger but limited part of California.

**- High (3) likely to establish a widespread distribution in California.**

2) **Known Pest Host Range:** The natural and experimental host range includes plants in multiple families.

Evaluate the host range of the pest.

**Score: 3**

- Low (1) has a very limited host range.
- Medium (2) has a moderate host range.
**- High (3) has a wide host range.**

3) **Pest Reproductive Potential:** The pathogen is spread with a flying vector and through clonal propagation of host material.

Evaluate the natural and artificial dispersal potential of the pest.

**Score: 3**

- Low (1) does not have high reproductive or dispersal potential.
- Medium (2) has either high reproductive or dispersal potential.
**- High (3) has both high reproduction and dispersal potential.**

4) **Economic Impact:** Sharka reduces fruit quality and yield, and is an important quarantine pest for the U.S. and our trading partners. It is vectored by aphids.

Evaluate the economic impact of the pest on California using the criteria below.

**Economic Impact: A, B, C, D**

**A. The pest could lower crop yield.**
**B. The pest could lower crop value (including increasing crop production costs).**
**C. The pest could trigger the loss of markets (including quarantines).**
**D. The pest could negatively change normal cultural practices.**
**E. The pest can vector, or is vectored, by another pestiferous organism.**
F. The organism is injurious or poisonous to agriculturally important animals.
G. The organism can interfere with the delivery or supply of water for agricultural uses.

**Economic Impact Score**: **3**

- Low (1) causes 0 or 1 of these impacts.
- Medium (2) causes 2 of these impacts.
**- High (3) causes 3 or more of these impacts.**

5) **Environmental Impact:** Eradication and suppression measures involve using insecticides to control aphids, the destruction of large areas of orchards or nurseries, and of nearby areas containing wild or subspontaneous *Prunus* sp. or other hosts. These measures can significantly alter the landscape of a given region.

Evaluate the environmental impact of the pest on California using the criteria below.

**Environmental Impact: D, E**

A. The pest could have a significant environmental impact such as lowering biodiversity, disrupting natural communities, or changing ecosystem processes.
B. The pest could directly affect threatened or endangered species.
C. The pest could impact threatened or endangered species by disrupting critical habitats.
**D. The pest could trigger additional official or private treatment programs.**
**E. The pest significantly impacts cultural practices, home/urban gardening, or ornamental plantings.**

**Environmental Impact Score: 3**

- Low (1) causes none of the above to occur.
- Medium (2) causes one of the above to occur.
**- High (3) causes two or more of the above to occur.**

## Consequences of Introduction to California for plum pox virus*:* High

Add up the total score and include it here. **15**
-Low = 5-8 points
**-**Medium = 9-12 points
-High = 13-15 points

6) **Post-Entry Distribution and Survey Information**: Evaluate the known distribution in California. Only official records identified by a taxonomic expert and supported by voucher specimens deposited in natural history collections should be considered. Pest incursions that have been eradicated, are under eradication or have been delimited with no further detections should not be included.

***Evaluation is "not established"***.

**Score: 0**
**-Not established (0) Pest never detected in California or known only from incursions.**
**-**Low (-1) Pest has a localized distribution in California or is established in one suitable climate/host area (region).
-Medium (-2) Pest is widespread in California but not fully established in the endangered area, or pest established in two contiguous suitable climate/host areas.
-High (-3) Pest has fully established in the endangered area, or pest is reported in more than two contiguous or non-contiguous suitable climate/host areas.

7) **The final score is** the consequence of the introduction score minus the post-entry distribution and survey information score: (Score)

***Final Score:*** *Score of Consequences of Introduction – Score of Post Entry Distribution and Survey Information* ***= 15***

## Uncertainty:

Eradication of PPV will only be effective with very early detection. Eradication efforts will be more difficult if the disease is found in urban residential areas.

## Conclusion and Rating Justification:

Based on the evidence provided above, the proposed rating for **plum pox virus is A.**

## References:

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Rimbaud, L., Dallot, S., Gottwald, T., Decroocq, V., Jacquot, E., Soubeyrand, S., Thébaud, G., 2015. Sharka epidemiology and worldwide management strategies: learning lessons to optimize disease control in perennial plants. Annual Review of Phytopathology, 53: 357-3578.

Scholthof, K.B.G., Adkins, S., Czosnek, H., Palukaitis, P., Jacquot, E., Hohn, T., Hohn, B., Saunders, K., Candresse, T., Ahlquist, P. and Hemenway, C., 2011. Top 10 plant viruses in molecular plant pathology. Molecular plant pathology, 12(9), pp.938-954.

USDA Phytosanitary Certificate Issuance and Tracking System, Phytosanitary Export Database (PExD) Harmful Organisms Database Report. Plum pox virus. Accessed 3/6/2026.

## Responsible Party:

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***Comment Period: 04/16/2026 through 05/31/2026**

***NOTE:**

You must be registered and logged in to post a comment. If you have registered and have not received the registration confirmation, please contact us at permits[@]cdfa.ca.gov.

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**Comment Format:**

- Comments should refer to the appropriate California Pest Rating Proposal Form subsection(s) being commented on, as shown below.

  **Example Comment:**

  Consequences of Introduction: 1. Climate/Host Interaction: [Your comment that relates to "Climate/Host Interaction" here.]

- Posted comments will not be able to be viewed immediately.
- Comments may not be posted if they:

  Contain inappropriate language which is not germane to the pest rating proposal;

  Contains defamatory, false, inaccurate, abusive, obscene, pornographic, sexually oriented, threatening, racially offensive, discriminatory or illegal material;

  Violates agency regulations prohibiting sexual harassment or other forms of discrimination;

  Violates agency regulations prohibiting workplace violence, including threats.

- Comments may be edited prior to posting to ensure they are entirely germane.
- Posted comments shall be those which have been approved in content and posted to the website to be viewed, not just submitted.

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**Pest Rating: A**

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