CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Proposal for

Xanthomonas hortorum pv. *vitians* (Brown) Morinière et al. 2020

Bacterial spot of lettuce

Current Pest Rating: none

Proposed Pest Rating: C

Kingdom: Bacteria, Phylum: Proteobacteria,
Class: Gammaproteobacteria, Order: Lysobacterales,
Family: Lysobacteraceae

Comment Period: 05/27/2026 through 07/11/2026

Initiating Event:

This pathogen has not been through the pest rating process. It is an important pathogen for export seed certification for lettuce. The risk to California from *Xanthomonas hortorum* pv. *vitians* is described herein, and a permanent rating is proposed.

History & Status:

Background:

Lettuce is a high-value commodity in California, generating roughly $3.67 billion in annual revenue as of 2024 and accounting for over 75% of U.S. production (CDFA Ag Stats). California grows over 100,000 acres of lettuce on average. There are three main growing regions; the Central Coast, which includes both the Salinas Valley and the Santa Maria/Oxnard region, is the largest with 75 percent of production for the state. The Desert region is the second largest growing region, with 19 percent of production. The Central Valley, which acts as a seasonal transition region between the other two growing regions, produces the final 6 percent.

Xanthomonas is a genus of phytopathogenic bacteria with many species that cause diseases such as citrus canker, vascular wilts, leaf and fruit spots, and blights of annual and perennial plants. Unlike other genera of phytopathogenic bacteria that typically occupy a diversity of ecological niches, almost all *Xanthomonas* species are plant pathogens and are found only in association with plants or plant materials. Some begin their plant host associations as epiphytes, using surface polysaccharides and forming biofilms, then transition to a pathogenic lifestyle under favorable conditions. *Xanthomonas*

spp. produce xanthomonadins, pigments that protect them from natural light and can give them yellow colors in axenic culture. Most *Xanthomonas* species are limited in their range, and subspecific pathovar designations have been assigned to some to reflect that specificity (Agrios, 2005).

In the past, bacterial taxonomists defined species based on what they thought were the most important phenotypic characteristics. The taxonomy of xanthomonads was based on a single feature, host specificity, and this was used to name species. This method, over time, resulted in an unreasonable number of nomenspecies. Dye et al. (1980) drastically reduced this and relied mainly on one species, *X. campestris*, and developed a special-use classification system below species with pathovar names for phytopathological variants. In 1995, Vauterin et al. created a new taxonomic system based on DNA homology data that considered both the genomic relationships among strains and the needs of plant pathologists to have a rational nomenclature for practical daily use. Bacterial spot of lettuce has been moved multiple times; it has been a pathovar of *X. campestris* and *X. axonopodis,* and most recently has been moved to *X. hortorum* (Morinière et al., 2020).

Xanthomonas hortorum pv. *vitians* (Xhv) is a foliar hemibiotrophic phytopathogen that is responsible for severe outbreaks of bacterial leaf spot of lettuce all around the world. This disease was first reported in South Carolina and Virginia in the United States in 1918 (Brown, 1918). The first observed losses in California came in 1963, when an outbreak was noted in several fields in the Salinas Valley (Schroth et al., 1964). Beginning in 1991, disease outbreaks have occurred with increasing frequency in commercial fields throughout San Benito, Santa Cruz, Monterey, San Luis Obispo, Santa Barbara, and Ventura counties (coastal regions) and Fresno and Imperial counties (inland areas) of California. Recurrent outbreaks suggest the disease has become widely established in California.

Hosts: Lactuca sativa (lettuce) (both head and leaf lettuce varieties) and *Syngonium podophyllum* (arrowhead vine) (CABI, 2026).

Symptoms: Bacterial leaf spot of lettuce is characterized by the progressive formation of small necrotic spots a few days after the lettuce has been exposed to the pathogen (Morinière et al., 2022). Symptoms can develop very quickly under favorable environmental conditions, producing black, water-soaked, angular lesions with halos (Myung et al., 2010). Disease is most observed on mature, fully expanded leaves (Koike and Gilbertson, 1997).

Transmission: This pathogen can be seedborne. It has been disseminated globally via seeds, and spreads locally with rain splash and contaminated equipment. Xhv survives between crops in association with infected field debris. Xhv was recovered from leaves of several symptomless weed species collected around infested commercial fields, but not from weeds collected around previously infested fields during fallow periods (Barak et al., 2001).

Damage Potential: Damage to lettuce crops from Xhv includes reduced quality as well as increased postharvest losses. It can cause severe economic damage, with outbreaks leading to a total 100% crop loss in fields. The disease is devastating because it affects marketability by causing dark, watery, necrotic lesions on leaves, often making the whole lettuce field not worth harvesting (Barak et al., 2001; CABI, 2026).

Worldwide Distribution: Africa: *South Africa, Zimbabwe.* Asia: *Japan, South Korea, Turkey*. Europe: *Germany, Italy.* North America: *United States* (California, Florida, Hawaii, New Jersey, New Mexico, New York, Pennsylvania, South Carolina, Virginia). Oceania: *Australia*. South America: *Brazil, Venezuela* (CABI, 2026).

Official Control*: Xanthomonas hortorum* pv. *vitians* is a quarantine pest in Israel (EPPO, 2026).

California Distribution: Fresno, Imperial, Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, and Ventura counties (French, 1989; CDFA PDR Database; Barak et al., 2001).

California Interceptions: none

The risk that *Xanthomonas hortorum* pv. *vitians* would pose to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** This pathogen is highly dependent on wet, cool conditions for infection and disease development. Conditions are favorable in coastal areas in winter and spring, and in the desert in winter.

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

   Score: **2**
   - 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 host range is limited to lettuce and arrowhead vine.

   Evaluate the host range of the pest.

   Score: 1
   - 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:** Bacterial diseases, under favorable conditions, develop large epidemics. Bacteria are moved by wind and rain. It can also be seed-borne.

   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:** Serious yield losses have been reported from this pathogen, and Xhv is a quarantine pest in Israel.

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

Economic Impact: A, B, C

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:** none

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

Environmental Impact:

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: 1
- 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 *Xanthomonas hortorum* pv. *vitians:* Medium

Add up the total score and include it here. **10**
-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 'high'.

   Score: -3

   -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* ***= 10-3=7***

Uncertainty: none

Conclusion and Rating Justification:

Based on the evidence provided above the proposed rating for ***Xanthomonas hortorum*** **pv. *vitians* is C.**

References:

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Responsible Party:

Heather J. Martin, Primary Plant Pathologist/Nematologist, CDFA/PHPPS ECOPERS, 1220 N St Rm 221, Sacramento, CA 95814 Phone: (916) 654-1017, permits[@]cdfa.ca.gov.

***Comment Period: 05/27/2026 through 07/11/2026**

***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.

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.

Proposed Pest Rating: C