

California Pest Rating Profile for

Erwinia pyrifoliae Kim et al. 1999

Asian pear blight

Pest Rating: B

Domain: Bacteria, Phylum: Proteobacteria,
Class: Gammaproteobacteria, Order: Enterobacteriales,
Family: Enterobacteriaceae

Comment Period: 06/08/2026 through 07/23/2026

Initiating Event:

This pathogen has not been through the pest rating process. The risk to California from *Erwinia pyrifoliae* is described herein, and a permanent rating is proposed.

History & Status:

Background:

Erwinia pyrifoliae is a Gram-negative, rod-shaped, motile bacterium, first described in 1999 as a necrotrophic pathogen causing a fire blight-like disease on Asian pear (*Pyrus pyrifolia*) in South Korea (Kim et al., 1999). Fire-blight, caused by *E. amylovora*, is a very destructive disease that is widespread in California (<https://blogs.cdfa.ca.gov/Section3162/?p=7371>). Experimental inoculations with *E. pyrifoliae* have shown weak symptoms on apple (*Malus domestica*) cultivars, and limited susceptibility in some European pear (*Pyrus communis*) varieties, highlighting its potential threat to multiple tree types in pome fruit orchards (Mackesy and Sullivan, 2017).

When it was initially observed, *E. pyrifoliae* was considered a major risk to Asian fruit production. Despite extensive surveying in South Korea, this pathogen has not been found there since 1998, after phytosanitary measures were initiated in the area of the original outbreak (Kim et al., 2001). In 2013 and 2014, *E. pyrifoliae* was detected on strawberries in greenhouses in the Netherlands, British Columbia, and Ohio (Wenneker, 2022).

Hosts: *Fragaria x ananassa* (strawberry), *Malus domestica* (apple), *Pyrus pyrifolia* (Asian pear) (CABI, 2026).

Symptoms: On Asian pears, infection leads to symptoms including necrotic streaks in leaf midribs, black leaf spots, petiole necrosis, and ooze production on affected shoots, blossoms, and fruitlets. Unlike fire blight caused by *E. amylovora*, black shoot blight caused by *E. pyrifoliae* lacks the characteristic shepherd's crook bending of shoots, though overall necrotic symptoms on pome fruits can appear similar (Ham and Park, 2024).

On strawberries in greenhouses, infection with *E. pyrifoliae* causes blackening and malformation of fruits. The bacterium induces flower blight and fruit rot, with intense brown to black discoloration of flowers and immature fruits (Mackesy and Sullivan, 2017). Symptoms include brown petals, green young fruits turning brown, malformed fruits, and bacterial slime on the surface of young fruits (Wenneker and Bergsma-Vlami, 2015).

Transmission: The bacterium infects through natural openings or wounds, spreads via xylem vessels, and overwinters in cankers. Disease progression in all hosts involves initial localized necrosis that expands through the xylem, with potential overwintering in cankers or as endophytes in healthy-appearing tissue (Mackesy and Sullivan, 2017). The disease spreads quickly within greenhouses via water splash and mechanical transmission through pruning. Long-distance spread is associated with the movement of infected nursery stock (CABI, 2026). Similar to *E. amylovora*, *E. pyrifoliae* is spread by bees (Steen et al., 2017; Johnson, 2000).

Damage Potential: Infected fruitlets develop necrotic spots and fail to mature, leading to significant crop losses in affected *Pyrus* orchards. The pathogen also affects strawberry production in European greenhouses, where it causes blackening and malformation of immature fruits, calyces, and stems without affecting leaves, resulting in up to 40% crop losses (Mackesy and Sullivan, 2017). Impacts vary depending on when the infection occurs. Early infection leads to black, unmarketable fruits, whereas late infection has only minor impacts (Wenneker and Bergsma-Vlami, 2015).

Worldwide Distribution: Canada (British Columbia), Korea, Netherlands, United States (Ohio) (Wenneker, 2022; CABI, 2026).

Official Control: *Erwinia pyrifoliae* is on the USDA PCIT's Harmful Organism list for Brazil, Canada, Chile, China, Taiwan, and the Bolivarian Republic of Venezuela (USDA PCIT, 2026). It is on the EPPO's A1 list for Argentina and Chile, and is a quarantine pest in China (EPPO, 2026).

California Distribution: None

California Interceptions: None

The risk that *Erwinia pyrifoliae* would pose to California is evaluated below.

Consequences of Introduction:

- 1) **Climate/Host Interaction:** *Erwinia pyrifoliae* likely has similar requirements to *E. amylovora*, which is influenced by seasonal weather. Warm spring temperatures, accompanied by intermittent rain and hail, are ideal for disease development. These conditions occur sporadically in parts of California where Asian pears are grown. In the Netherlands, Ohio, and B.C., disease on strawberries has only been found in greenhouses, where temperatures are warm, and humidity is high.

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 pears, apples, and strawberries.

Evaluate the host range of the pest.

Score: 2

- 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 pathogens have an exponential rate of reproduction under favorable environmental conditions. *Erwinia* spp. are spread by wind, rain, and insects.

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:** The initial impact on Asian pears triggered a large phytosanitary response that seems to have been extremely effective. The concern now is mostly for strawberries in greenhouses, where considerable losses have been reported. It is not a regulated pest in the U.S.

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

Economic Impact: A, 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.
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- 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: 2

- 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 has been reported

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 *Erwinia pyrifoliae*: 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 '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).
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-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*

Uncertainty:

The epidemiology of *E. pyrifoliae* is largely unknown. The lack of research and information could be attributed to the sporadic and limited distribution of this disease, as well as its low impact thus far.

Conclusion and Rating Justification:

Based on the evidence provided above, the proposed rating for *Erwinia pyrifoliae* is **B**.

References:

EPPO Database. 2026. *Erwinia pyrifoliae*. <https://gd.eppo.int/taxon/ERWIPY> Accessed 5/18/2026

Ham, H. and Park, D.S., 2024. New insights and approach toward the genetic diversity and strain typing of *Erwinia pyrifoliae* based on *rsxC*, an electron transport gene. *Plant Disease*, 108(2), pp.296-301.

Johnson, K.B. 2000. Fire blight of apple and pear. *The Plant Health Instructor*. DOI: 10.1094/PHI-I-20000726-01. Updated 2015.

Kim, W. S., Gardanm, L., Rhim, S. L., and Geider, K. 1999. *Erwinia pyrifoliae* sp. nov., a novel pathogen that affects Asian pear trees (*Pyrus pyrifolia* Nakai). *Int. J. Syst. Bacteriol.* 49:899-906.

Kim, W.S., Jock, S., Paulin, J.P., Rhim, S.L., and Geider, K. 2001. Molecular detection and differentiation of *Erwinia pyrifoliae* and host range analysis of the Asian pear pathogen. *Plant Disease* 85:1183-1188.

Mackesy, D. Z., and Sullivan, M. 2017. CPHST Pest Datasheet for *Erwinia pyrifoliae*. USDA-APHISPPQ-CPHST. <https://caps.ceris.purdue.edu/wp-content/uploads/2025/07/Erwinia-pyrifoliae-datasheet-v41.pdf>

Rhim, S.L., Völksch, B., Gardan, L., Paulin, J.P., Langlotz, C., Kim, W.S., and Geider, K. 1999. *Erwinia pyrifoliae*, an *Erwinia* species different from *Erwinia amylovora*, causes a necrotic disease of Asian pear trees. *Plant Pathology* 48(4):514-520.

Steen, J.J.M. van der, Bergsma-Vlami, M., and Wenneker, M. 2017. The perfect match: simultaneous strawberry pollination and bio-sampling of the plant pathogenic bacterium *Erwinia pyrifoliae* by honeybees (*Apis mellifera*). Sustainable Agriculture Research 7:25.

USDA Phytosanitary Certificate Issuance and Tracking System, Phytosanitary Export Database (PEXD) Harmful Organisms Database Report. *Erwinia pyrifoliae*. Accessed 5/18/2026.

Wenneker, M. 2022. CABI Compendium. *Erwinia pyrifoliae* (Asian pear blight)
<https://www.cabidigitallibrary.org/doi/full/10.1079/cabicompendium.51264>

Wenneker, M., and Bergsma-Vlami, M. 2015. *Erwinia pyrifoliae*, a new pathogen on strawberry in the Netherlands. J. Berry Res. 5:17-22.

Responsible Party:

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***Comment Period: 06/08/2026 through 07/23/2026**

*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](mailto: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:
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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.

Pest Rating: B
