

California Pest Rating Proposal for
Acidovorax avenae
(Manns) Willems, Goor, Thielemans, Gillis, Kersters & De Ley
Bacterial leaf blight of grasses

Current Pest Rating: Z

Proposed Pest Rating: C

Kingdom: Bacteria, Phylum: Pseudomonadota,
Class: Betaproteobacteria, Order: Burkholderiales,
Family: Comamonadaceae

Comment Period: 10/27/2026 through 12/11/2026

Initiating Event:

In September 2006, Santa Cruz County agricultural inspectors conducted a high-risk plant material inspection of *Strelitzia* plants shipped from Miami-Dade County in Florida to a wholesale nursery. The plants showed foliar spotting and internal discoloration. Samples were sent to CDFA's Plant Pest Detection Center at Meadowview. Plant pathologist Sebastian Albu diagnosed *Acidovorax avenae* and assigned a temporary Z-rating. This pest has not been through the pest rating system. The risk to California from *A. avenae* is described herein, and a permanent rating is proposed.

History & Status:

Background:

Bacteria in the genus *Acidovorax* cause diseases of a wide range of economically important crops including corn, rice, watermelon, anthurium, and orchids. *Acidovorax avenae* (formerly known as *A. avenae* subsp. *avenae*) causes bacterial leaf blight and red stripe on economically important monocotyledonous crops and grasses (Poaceae), i.e., maize, sugarcane, and millets (Schaad et al., 2008). The pathogen was first described in 1909 as the causal agent of blade blight of oats in Ohio and was named *Pseudomonas avenae* (Manns, 1909). DNA-rRNA hybridizations, DNA-DNA hybridizations, polyacrylamide gel electrophoresis of whole-cell proteins, and a numerical analysis of carbon assimilation tests were carried out by Willems et al. (1992), who created the genus *Acidovorax* and placed grass-infecting strains into *avenae*.

Historically, the species *avenae* was divided into subspecies mostly based on host range. In 2008, Schaad et al. analyzed genotypic and phenotypic relatedness among strains and subspecies of *A. avenae*. This analysis of 16S rDNA sequences and the 16S–23S rDNA internal transcribed spacer region revealed four (A, B, C, and D) distinct genotypes: subsp. *avenae* in taxon A with strains from corn, subsp. *avenae* strains from rice in taxon B, subsp. *citrulli* strains from cucurbits in taxon C, and subsp. *cattleyae* strains from orchids in taxon D. All four taxa were easily differentiated phenotypically from each other and from all other recognized *Acidovorax* species. From this work, Schaad et al. (2008) proposed an emendation of the species *A. avenae*, reclassifying the subspecies as their own species. This work left most strains from grasses, excluding rice, as *A. avenae*. Strains of *A. avenae* did not contain 3-hydroxyoctanoic acid, which was found in all other species. *Acidovorax avenae* is distributed globally, infecting poaceous plants and occasionally non-poaceous crops including *Strelitzia* (CABI, 2026).

Hosts: *Agropyron* (wheatgrass), *Agrostis stolonifera* (creeping bentgrass), *Avena sativa* (oats), *Bromus catharticus* (prairie grass), *B. inermis* (awnless brome), *B. marginatus* (Mountain brome), *Camellia sinensis* (tea), *Caryota*, *Digitaria sanguinalis* (large crabgrass), *Echinochloa crus-galli* (barnyard grass), *Eleusine coracana* (finger millet), *Hordeum vulgare* (barley), *Panicum miliaceum* (millet), *Paspalum*, *Pennisetum glaucum* (pearl millet), *Saccharum officinarum* (sugarcane), *Setaria italica* (foxtail millet), *S. viridis* (green foxtail), *Sorghum bicolor* (sorghum), *Strelitzia*, *Triticum aestivum* (wheat), *Zea mays* (maize), and *Z. mexicana* (teosinte) (CABI, 2026).

Symptoms: On grasses and cereals, small, water-soaked, translucent spots emerge first on leaves. These rapidly stretch out into narrow, elongated, brownish-red or maroon stripes following the veins. Over time, the leaves turn dry, straw-colored, or white. The infection can spread internally downward into the plant stem. This triggers top rot (the death and rotting of the upper growing tip) and wilting. Cracks may form on infected stalks, oozing a foul-smelling bacterial fluid. On golf greens and lawns, the disease causes severe thinning, stunted growth, and patches of grass that fade to a yellowish-white color before dying off completely. Infected creeping bentgrass rapidly etiolates, producing elongated, yellow blades of grass with stems that extend 0.75 to 4 cm above the turfgrass canopy (Wu et al., 2018; Giordano et al., 2012).

White bird of paradise (*Strelitzia nicolai*) develops brown, dead (necrotic) stripes running vertically between the lateral leaf veins. Dark lines appear first right along the strong central midvein of the leaf and then slowly spread outward toward the outer leaf margins. The lesions primarily develop on the youngest, newest leaves as they try to emerge from the central whorl of the plant. In heavy infections, especially in warm, wet conditions or nursery settings with daily overhead watering, the disease can cause complete seedling blight and plant mortality. Even in mild cases, it severely ruins the aesthetic value of the large, dramatic leaves (Seijo and Peres, 2011).

Transmission: *Acidovorax avenae* is primarily transmitted through infected seeds, which serve as the main source of long-distance spread because the bacteria can survive internally or externally on seed coats for extended periods, but at a low level (Anan et al., 2013; CABI, 2026). The bacterium is not thought to survive well in soil or in plant debris (Sumner and Schaad, 1977). Clonal transmission occurs

in vegetatively propagated crops like sugarcane (Zhao et al., 2023). Once introduced into a field or greenhouse, the pathogen spreads secondarily from plant to plant through splashing water from rain or overhead irrigation, mechanical contact via contaminated agricultural tools and human handling, and occasional insect activity. The bacteria then colonize host plants such as cucurbits or cereals by entering through natural openings like stomata and hydathodes, or through wounds caused by insects and mechanical injury, a process heavily favored by high humidity and free surface moisture (CABI, 2026).

Damage Potential: Damage from *A. avenae* spans from moderate aesthetic loss to significant crop failure, highly dependent on the host plant and climate conditions. In cereal crops like rice and corn, the pathogen causes leaf blighting, wilting, and stalk rot, which can lead to yield losses of up to 40% in heavily infected fields under optimal hot and humid conditions. For high-value turfgrasses, such as creeping bentgrass on golf course putting greens, the damage is functional and visual; the bacterium triggers severe etiolation (yellowing and stretching) followed by rapid turf decline, destroying smooth playing surfaces and forcing chemical interventions or re-seeding. In ornamental production, such as *Strelitzia* cultivation, the damage potential manifests as rapid foliar necrosis that ruins plant marketability and aesthetic value, occasionally causing seedling death and forcing growers to discard entire nursery blocks (Seijo and Phares, 2012; Giordano et al. 2012; CABI, 2006).

Worldwide Distribution: Africa: *Burkina Faso, Comoros, the Democratic Republic of the Congo, Côte d'Ivoire, Egypt, Ethiopia, Gabon, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Niger, Nigeria, Réunion, Senegal, Sierra Leone, South Africa, Sudan, United Republic of Tanzania, Uganda and Zimbabwe.* America: *Argentina, Barbados, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, El Salvador, French Guiana, Guadeloupe, Guatemala, Guyana, Honduras, Jamaica, Martinique, Mexico, Nicaragua, Panama, Paraguay, Puerto Rico, Peru, St Kitts and Nevis, St Lucia, Suriname, Trinidad and Tobago, United States of America (Alabama, Arkansas, Florida, Georgia, Hawaii, Illinois, Kansas, Louisiana, Montana, Nebraska, New York, Pennsylvania, South Dakota, Texas, Virginia, Wisconsin), Uruguay, and Venezuela.* Asia: *Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Iran, Iraq, Japan, Republic of Korea, Malaysia, Myanmar, Nepal, North Korea, Pakistan, Philippines, Sri Lanka, Taiwan, Thailand, Turkey, and Vietnam.* Europe: *Italy, Portugal.* Oceania: *Australia, Fiji, Guam, Papua New Guinea* (CABI, 2026).

Official Control: *Acidovorax avenae* is on the USDA PCIT's Harmful Organisms list for Ecuador, Egypt, Israel, Morocco, and Nicaragua (USDA PCIT, 2026). *Acidovorax avenae* is on EPPO's A1 list for Egypt and Armenia and is a quarantine pest for Morocco (EPPO, 2026).

California Distribution: none

California Interceptions: one interception of *Strelitzia* from Florida. See 'initiating event'.

The risk that *Acidovorax avenae* would pose to California is evaluated below.

Consequences of Introduction:

- 1) Climate/Host Interaction:** The primary barrier keeping this pathogen out of California is climate compatibility. *Acidovorax avenae* is a warm-weather, moisture-driven bacterium. It relies heavily on frequent, heavy summer rainfall or high-humidity environments (optimally 24–35°C / 75–95°F) combined with leaf wounds or wind-splashed water to spread.

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

Score: 1

- **Low (1) Not likely to be established 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 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:** This bacterium multiplies rapidly under favorable conditions. It can be spread by seed, vegetative cuttings, and wind-driven rain.

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 reproductive and dispersal potential.**

- 4) Economic Impact:** This disease causes losses to grasses, grains, and ornamental foliage plants. Although *A. avenae* can be transmitted by seeds of maize or setts of sugarcane, the disease is generally of minor importance in these crops, except in exceptional circumstances, and represents a low risk.

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

Economic Impact: A, B

- 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: 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: This pathogen affects *Strelitzia*, which are widely planted in warmer parts of California.

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

Environmental Impact: 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: 2

- 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 *Acidovorax avenae*: Medium

Add up the total score and include it here. **11**

- 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 is established in two contiguous suitable climate/host areas.
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-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 consequences 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 = 11*

Uncertainty:

This pathogen has undergone substantial taxonomic revision, with older reports made under the genus *Pseudomonas*. Historical records that lack molecular characterization should be interpreted cautiously. The pathogen is seedborne and infects numerous cultivated and wild grasses, which could permit undetected or localized populations to persist outside routinely surveyed agricultural production systems. There is also uncertainty regarding the magnitude of economic impacts under California conditions, because disease severity is strongly influenced by environmental conditions and significant outbreaks appear to be sporadic.

Conclusion and Rating Justification:

Based on the evidence provided above, the proposed rating for *Acidovorax avenae* is **C**.

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Responsible Party:

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***Comment Period: 10/27/2026 through 12/11/2026**

*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](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:
 - 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
