CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Proposal for

Watermelon crinkle leaf-associated virus 1

Current Pest Rating: none

Proposed Pest Rating: B

Kingdom: Orthornavirae, Phylum: Negarnaviricota,
Class: Bunyaviricetes, Order: Bunyavirales,
Family: Phenuiviridae, Genus: Coguvirus
Species: *Coguvirus citrulli*

Comment Period: 07/03/2026 through 08/17/2026

Initiating Event:

In May 2026, Professor Robert Gilbertson (University of California, Davis) informed CDFA Permits that watermelon crinkle leaf-associated virus 1 (WCLaV-1) and 2 (WCLaV-2) had been detected from symptomatic watermelon plants collected by UCCE plant pathologist Tom Turini from a commercial field in Fresno County. The detection was made with RT-PCR and sequencing. Although this detection was not made through an official regulatory survey, the finding suggests that WCLaV-1 may already be present in the state. This virus has not been evaluated through the pest rating process. The risk that WCLaV-1 poses to California agriculture is evaluated herein, and a permanent rating is proposed.

History & Status:

Background:

Cucurbits are a significant specialty crop in California, grown mainly in the Central Valley and desert production regions, and California is a leading U.S. producer. In 2024, the farm gate value exceeded $400M for watermelon, cantaloupe, honeydew, squash, and cucumber crops. California is also a major producer of cucurbit seeds for export (CDFA Ag Stats).

The initial identification of WCLaV-1 was made in China on watermelon during surveys conducted in 2015 and 2016 (Xin et al., 2017). The first US report was on watermelon from Texas in 2020 (Hernandez et al. 2021). It was detected in 2023 in watermelon and zucchini in Yuma, Arizona, on the border with California (Murcia Bermudez et al., 2025). WCLaV-1 and WCLaV-2 were placed in the genus *Coguvirus* (family Phenuiviridae) based on genome organization (Zhang et al., 2021). Little is known about the mode(s) of transmission or potential vectors of *Coguvirus* spp., although it has been

suggested that seed is a probable means of transmission. The impact on watermelon health and yield is unknown, and WCLaV-1 often co-occurs with WCLaV-2 and with other cucurbit viruses (Hendricks and Roberts, 2023). This co-infection makes it difficult to clarify its transmission, symptoms, and potential risk.

Hosts: *Citrullus lanatus* (watermelon), *Cucumis melo* (melon), *C. sativus* (cucumber), *C. pepo* (squash), *Cucurbita pepo* var. *recticollis* (straightneck squash) (EPPO, 2026; Jailani et al., 2023).

Symptoms: Watermelon is the host in which symptoms have been most thoroughly described. Reported symptoms in Florida include leaf crinkling, wrinkling, curling, and puckering. Chlorosis and yellow mottling, mosaic patterns, thickened leaves, distorted new growth, stunting, and reduced vigor have also been described (Hendricks et al., 2023). In Australia, watermelons exhibited mottling, slight puckering, and curling of leaves. Some fruit showed dark green lines and circular lesions (Mulholland et al., 2022).

Zucchini reported symptoms include pronounced chlorosis and mild leaf crinkling. Because mixed infections with other cucurbit viruses are common, symptom expression may vary, and visual diagnosis is not considered reliable (Iriarte et al., 2023).

Transmission: The natural mode of transmission of WCLaV-1 remains uncertain. No arthropod vector has been identified despite investigations. This is somewhat unusual because many members of this order are known to be transmitted by arthropods such as thrips, mites, or other insects (EPPO, 2026). It can be mechanically transmitted (Mulholland et al., 2022). Strong evidence of seed transmission comes from Kauffmann et al. (2024), although others have also suggested it. They developed specific antibodies against WCLaV-1 and used them to test seedlings grown from commercial watermelon seed lots. They found extraordinarily high infection rates among seedlings, reaching 93% for one variety tested. They also showed that seed lots that were 8 years old still had detectable levels of virus. They localized the virus to the cotyledons of seedlings.

Damage Potential: The impact of WCLa-V-1 remains incompletely understood because the virus was only recently discovered and is frequently detected in mixed infections. Available evidence indicates that WCLaV-1 has the potential to damage cucurbit production. The virus has been reported at high incidence in production fields, exceeding 50% in some watermelon fields. Although quantitative yield loss data are lacking, the ability of the virus to infect multiple economically important cucurbit crops, high incidences, and increasing geographical distribution suggest that WCLaV-1 could negatively affect the production and marketability of cucurbits.

Worldwide Distribution: Australia, Brazil, China, Iran, Greece, Slovenia, Spain, Türkiye, United States (Arizona, Florida, Georgia, Indiana, Texas) (EPPO, 2026).

Official Control*:* none

California Distribution: one unofficial detection in Fresno County (see 'Initiating event')

California Interceptions: none

The risk that watermelon crinkle leaf-associated virus-1 would pose to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** This virus is likely to be found wherever its hosts can grow.

   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 establish 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 some cucurbits.

   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:** WCLaV-1 replicates inside its host plants. If it is proven to be seed-borne, the movement of infected seed will facilitate its spread around the world. No insect vectors have been identified.

   Evaluate the natural and artificial dispersal potential of the pest.

   Score: 2
   - 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:** New or emerging cucurbit viruses are a major concern. It is difficult to gather yield information when viruses are commonly found in mixed infections.

   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: Several native species in the family Cucurbitaceae occur in California. Although the susceptibility of these native species to WCLaV-1 has not been investigated, they could potentially serve as reservoirs for the virus if they are susceptible.

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

Environmental Impact: A
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 WCLaV-1*:* Medium

Add up the total score and include it here. **9**
-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 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* ***= 9***

Uncertainty:

If surveys eventually show that WCLaV-1 is already widespread in California cucurbit production areas, a C rating would become more appropriate.

Conclusion and Rating Justification:

Based on the evidence provided above the proposed rating for **watermelon crinkle leaf-associated virus-1 is B.**

References:

EPPO Database 2026. *Coguvirus citrulli* https://gd.eppo.int/taxon/ WCLAV1 Accessed 6/10/2026

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Responsible Party:

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***Comment Period: 07/03/2026 through 08/17/2026**

***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: B