cdfa CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Profile for

Eggplant mosaic virus

Pest Rating: B

Kingdom: Viruses and viroids, Category: Riboviria,
Category: Orthornavirae, Phylum: Kitrinoviricota,
Class: Alsuviricetes, Order: Tymovirales,
Family: Tymoviridae, Genus: Tymovirus

Comment Period: 11/26/2025 through 01/10/2026

Initiating Event:

This pathogen has not been through the pest rating process. It is an important pathogen for export seed certification programs. The risk to California from Eggplant mosaic virus is described herein, and a permanent rating is proposed.

History & Status:

Background:

California is a major producer of eggplant in the United States, second only to New Jersey. Eggplant is a warm-season crop that does not tolerate frost. There are three production areas: the southern desert valleys (Riverside and San Bernardino counties), the San Joaquin Valley (Stanislaus and Fresno counties), and the southern coast (Orange County), with harvests from April through December (CDFA Ag Stats; Aguiar et al., 1998).

Eggplant mosaic virus (EMV) is a member of the genus Tymovirus. Tymoviruses are readily transmissible by mechanical inoculation. They replicate to high titers and invade all main tissues of the host. Some tymoviruses are weakly seed-transmissible and are also spread by beetles, which serve as low-efficiency local vectors. Generally, they have narrow host ranges. Infection induces vesicles at the periphery of chloroplasts and, to a lesser degree, in mitochondria, resulting in characteristic aggregates of swollen and modified chloroplasts. Empty virion shells sometimes accumulate in the nuclei (Lefkowitz et al., 2017).

EMV is a small spherical virus that possesses a monopartite positive-strand RNA genome that was first described in Trinidad and Tobago by Ferguson (1951) and Dale (1954). It is highly stable outside the host, with virions persisting on plant debris, tools, and surfaces for extended periods. The host range is limited to a few solanaceous species (CABI, 2025).

Hosts: Nicotiana tabacum (tobacco), *Solanum lycopersicum* (tomato), *Solanum melongena* (eggplant), *Solanum seaforthianum* (Brazilian nightshade) (CABI, 2025).

Symptoms: Symptoms of eggplant mosaic virus include yellow or green mosaic and mottling patterns on leaves, stunted plant growth, and distorted or deformed leaves. Other symptoms can include leaf curling and yellow or brown ringspots on fruit.

Transmission: EMV is mechanically transmitted with infectious sap. It can also be transmitted by the feeding of flea beetles (*Epitrix* spp.). Flea beetles are present through the growing season but are especially damaging following spring transplanting, often defoliating and killing the plants. The adults overwinter in weeds or debris outside the fields. In the spring, they feed on stems and foliage of young eggplants and lay eggs in the soil. The larvae hatch from the eggs and feed on the roots, pupating in the soil. After the adults emerge, they feed again on the leaves (Aguiar et al., 2010). Flea beetles spread viruses by feeding on infected plants, acquiring the virus on their mouthparts and in their digestive systems, and then transferring it to healthy plants through new feeding wounds (Wielkopolan et al., 2021). EMV has been reported to be seed-borne (Sharma et al., 2013).

Damage Potential: Viral infection can result in overall reduced fruit size and quality (CABI, 2025).

Worldwide Distribution: North America: *Trinidad and Tobago*. South America: *Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Peru, Suriname, Venezuela* (CABI, 2025).

Official Control*:* Eggplant mosaic virus is on the EPPO's list as a regulated non-quarantine pest in Egypt (EPPO, 2025). It is on the USDA PCIT's harmful organisms list for El Salvador, Guatemala, Israel, Japan, Madagascar, Mozambique, and Syrian Arab Republic (USDA-PCIT, 2025).

California Distribution: none.

California Interceptions: none.

The risk that Eggplant mosaic virus would pose to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** This virus is likely to survive 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 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 a few members of Solanaceae.

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:** This virus reproduces inside its hosts and can be spread by seed.

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:** There are limited reports of smaller and fewer fruits produced by infected plants. The virus can be vectored by flea beetles, which are common in California and already a significant pest for eggplants. The virus is a pest of concern for our export seed program.

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

Economic Impact: A, C, E
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 have 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 Eggplant mosaic virus*:* 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:

There are multiple viruses in California that cause symptoms on eggplants, including Potyviruses, Tobamoviruses and Tosposvirues. Identification needs to be made by a plant virologist. Co-infections can increase yield loss, and it can be difficult to separate the impact of the two viruses on yield when they co-occur. There is uncertainty regarding impacts reported in the literature, and therefore, the potential impacts for California from this virus could be more/less than what is presented.

Conclusion and Rating Justification:

Based on the evidence provided above, the proposed rating for **Eggplant mosaic virus is B.**

References:

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Aguiar, J., Molinar, R. and Valencia, J., 1998. Eggplant production in California. UC ANR Publication 7235

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EPPO Database. Eggplant mosaic virus https://gd.eppo.int/taxon/EMV000 Accessed 10/29/2025

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Sharma, D.K., Sharma, N. and Rana, S., 2013. Seed-borne diseases of brinjal (Solanum melongena L.) and their control measures: a review. International Journal of Bioassays. 1429-1433

USDA Phytosanitary Certificate Issuance and Tracking System, Phytosanitary Export Database (PExD) Harmful Organisms Database Report. Eggplant mosaic virus. Accessed 10/29/2025.

Wielkopolan, B., Jakubowska, M. and Obrępalska-Stęplowska, A., 2021. Beetles as plant pathogen vectors. Frontiers in Plant Science, 12, p.748093.

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: 11/26/2025 through 01/10/2026**

***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.

Pest Rating: B
