California Pest Rating Profile for

Peanut stunt virus

Pest Rating: C

Kingdom: Viruses and viroids, Category: Riboviria, Category: Orthornavirae, Phylum: Kitrinoviricota, Class: Alsuviricetes, Order: Martellivirales, Family: Bromoviridae, Genus: Cucumovirus

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Comment Period: 11/13/2025 through 12/28/2025

Initiating Event:

This pathogen has not been through the pest rating process. The risk to California from Peanut stunt virus (PStuV) is described herein, and a permanent rating is proposed.

History & Status:

Background:

Alfalfa (*Medicago sativa*) is one of the most palatable forages, providing high energy and protein for dairy cows as well as other livestock. California produces over 20 percent of the nation's milk and is the leading dairy-producing state, creating a strong demand for alfalfa. Alfalfa is the state's highest-acreage crop, and California is the leading alfalfa forage, hay, haylage, greenchop, and seed-producing state. In 2022, 3.2 million tons of alfalfa were produced statewide with a total value of $1.5 billion, while seed production (mainly in Imperial County) was valued at $82M.

In addition to dairy cattle, there are also significant numbers of other alfalfa-consuming livestock, including beef cattle, horses, goats, and sheep. Over 50 percent of California's alfalfa is produced in the Central Valley, with the Low Desert (Imperial County) second in production. Nearly 100 percent of the state's alfalfa is irrigated. Alfalfa is a leading commodity listed for the calculation of the gross value of agricultural production in 22 of California's 58 counties (CDFA Ag Stats).

Peanut stunt virus (PStuV), a member of the genus Cucumovirus in the family Bromoviridae. PStuV is a positive-sense, single-stranded RNA ((+)ssRNA) virus, and its genome consists of three genomic and two subgenomic strands. Additionally, certain PSV strains contain a noncoding satellite RNA particle

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(satRNA) (Obrępalska-Stęplowska et al., 2008). The virus was first described in peanuts in North Carolina and Virginia in 1964 (Miller and Troutman, 1966; Cooper, 1966). Subsequently, it has been reported in France, Japan, Korea, Morocco, Poland, the Sudan, Iran, China, and Spain (CABI, 2025). The virus has a wide host range with the main hosts being soybeans, clover, and peanuts, with additional reports from alfalfa, tobacco, snapbeans, various cucurbits, peppers, and tomatoes (Baker et al., 1999). The virus is non-persistently transmitted by aphids, including the cowpea aphid (*Aphis craccivora*), spirea aphid (*A. spiraecola*), and green peach aphid (*Myzus persicae*) (Hebert, 1967). It is a pest of concern for alfalfa grown for seed.

There are two other Cucumoviruses that affect alfalfa in California. They are Alfalfa mosaic virus and Cucumber mosaic virus. Alfalfa mosaic virus may cause yellow mottling or streaking on leaves, but at other times the symptoms are masked and leaves appear normal. Cucumber mosaic virus shows no symptoms in alfalfa. These viruses are not of economic importance in California alfalfa production. However, aphids that feed on alfalfa and then move to other crops may transmit these viruses to economically important crops (Davis et al., 2017); this is also a concern for Peanut stunt virus.

Hosts: Apium graveolens (celery), *Arachis hypogaea* (groundnut), *Crotalaria anagyroides, Datura stramonium* (jimsonweed), *Glycine max* (soybean), *Lupinus albus* (white lupine), *L. luteus* (yellow lupin), *Medicago sativa* (alfalfa), *Nicotiana tabacum* (tobacco), *Phaseolus vulgaris* (common bean), *Pisum sativum* (pea), *Securigera varia* (crown vetch), *Solanum lycopersicum* (tomato), *Tephrosia* (hoary-pea), *Trifolium incarnatum* (Crimson clover), *T. pratense* (red clover), *T. repens* (white clover), *T. subterraneum* (subterranean clover), *T. vesiculosum* (arrowleaf clover), *Typhonium trilobatum, Vicia faba* (faba bean), *Vigna angularis* (adzuki bean), and *V. unguiculata* (cowpea) (CABI, 2025).

Symptoms: Symptoms vary by the crop species, the variety of the crop, the strain of the virus, the age of the plant at the time of infection, and weather conditions during the growing season. For peanuts, symptoms can involve the whole plant, parts of the plant, or just the branch tip. If there is early infection, the plant may not grow beyond a few inches in height or width. The leaves will be pale green or yellow and malformed and curled at the edges. The fruit from infected plants is frequently stunted and malformed; peanut shells can split. Beans become severely stunted from infection by PStuV. Plants may fail to grow past the 2-3 leaf stage. A mosaic pattern of green and yellow is common, and the pods are small, twisted, malformed, and waxy in appearance (Tolin and Polston, 1978).

Transmission: PStuV is transmitted nonpersistently by aphids that are common in California. Confirmed vectors include the cowpea aphid (*Aphis craccivora*), spirea aphid (*A. spiraecola*), and green peach aphid (*Myzus persicae*). White clover (*Trifolium repens*) is believed to be the principal reservoir host of this virus. (Hebert, 1967; McLaughlin et al., 1992). It can also be transmitted by mechanical inoculation. It is transmitted by seed in peanuts at a very low level (Troutman et al., 1967). Seeds are not considered to be very important to the spread of this virus in any host. For alfalfa, which is grown as a perennial crop and cut multiple times, the virus is mechanically transmitted (Bananej et al., 1998).

Damage Potential: In susceptible cultivars of pole, snap, and dry beans, flower production was reduced by 50% and pod production by 90% (Echandi and Hebert, 1971). It is found infrequently in soybeans in the southern United States, where it is generally not considered to be a major problem. However, in

Japan, yield losses of 33% can occur due to reductions in seed number and size, along with reductions in quality caused by seed coat mottling (Iizuka & Yunoki, 1974; Kosaka, 1997).

Worldwide Distribution: Africa: *Morocco, Sudan*. Asia: *China, Georgia, Iran, Japan, North Korea, South Korea*. Europe: *Bulgaria, France, Hungary, Italy, Poland, Spain*. North America: *United States* (Alabama, Arkansas, Florida, Georgia, Illinois, Iowa, Kentucky, Ohio, Pennsylvania, Mississippi, Missouri, Nebraska, North Carolina, South Carolina, Texas, Virginia, Washington) (CABI, 2025).

Official Control*:* Peanut stunt virus is on the EPPO's A1 list for Argentina and Brazil, and on the A2 list for COSAVE (Comité de Sanidad Vegetal del Cono Sur). It is a quarantine pest in China and Mexico, and a regulated non-quarantine pest in Egypt (EPPO, 2025). It is on the USDA PCIT's harmful organisms list for Argentina, Brazil, China, Colombia, Guatemala, Honduras, India, Indonesia, Japan, Madagascar, Mexico, Mozambique, Namibia, New Zealand, Paraguay, Peru, South Africa, Taiwan, Venezuela, Timor-Leste, and Uruguay (USDA-PCIT, 2025). It is a pest of concern in CDFA's phytosanitary seed program for alfalfa.

California Distribution: There is an official record from 1993 on black-eyed pea with the designation of "CA" meaning assumed to be statewide (CDFA PDR database, 2025).

California Interceptions: none

The risk that Peanut stunt virus would pose to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** This virus is likely to be found wherever its hosts and vectors are found.

   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 mainly legumes, but includes other host 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:** The virus multiplies in its hosts (some of which are perennials), but the seed is not an important source of inoculum.

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:** This disease lowers crop yield and value in some cropping systems. It is a quarantine pest in other countries and is a pest of concern for phytosanitary seed export programs, despite the lack of evidence that it is seed-borne in most hosts.

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 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 Peanut stunt virus*:* 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 '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 is 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* **= 8**

Uncertainty:

Although there are no recent records of this virus, it has likely had the opportunity to be spread by aphids and agricultural practices, similarly to Cucumber mosaic virus or Alfalfa mosaic virus, so it seems likely not to be an important pathogen for California.

Conclusion and Rating Justification:

Based on the evidence provided above, the proposed rating for **Peanut stunt virus is C.**

References:

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Responsible Party:

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***Comment Period: 11/13/2025 through 12/28/2025**

***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: C
