CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Profile for

Iris yellow spot virus

Pest Rating: C

Kingdom: Viruses and viroids, Category: Riboviria,
Category: Orthornavirae, Phylum: Negarnaviricota,
Subphylum: Polyploviricotina, Class: Bunyaviricetes,
Order: Elliovirales, Family: Tospoviridae
Genus: Orthotospovirus

Comment Period: 09/30/2026 through 11/14/2026

Initiating Event:

This pathogen has not been through the pest rating process. The risk to California from Iris yellow spot virus is described herein, and a permanent rating is proposed.

History & Status:

Background:

Orthotospovirus is a genus of negative-strand RNA viruses that infect plants, causing significant economic losses in agriculture worldwide. Named after the Tomato spotted wilt virus (TSWV), Orthotospoviruses have a broad host range, infecting more than 1090 plant species over 90 families. Orthotospoviruses are transmitted in a circulative-propagative manner by insects in the order Thysanoptera (thrips), mainly belonging to the genera *Frankliniella* and *Thrips*. Symptoms of infection include stunting, necrosis, and ring spots on leaves, stems, and fruit (Nigam and Garcia-Ruiz, 2020).

Iris yellow spot virus (IYSV) was first reported on onion from Brazil (de Avila et al., 1981). Today IYSV is widespread in onion-producing areas globally and is an economically important threat to onions and other hosts (agronomic crops and weeds), reducing bulb size and seed yields (Gent et al., 2006).

Hosts: *Allium ampeloprasum* (great-headed garlic, wild leek), *A. ascalonicum* (shallot), *A. cepa* (onion), *A. cyathophorum* (cupped allium), *A. fistulosum* (bunching onion, Welsh onion), *A.*

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flavum (yellow garlic), *A. lusitanicum* (Portuguese garlic, wild leek), *A. porrum* (leek), *A. rotundum* (round-headed garlic), *A. sativum* (garlic), *A. tuberosum* (garlic chives), *Alstroemeria* spp. (lily of the Incas, Peruvian lily), *Amaranthus hybridus* (smooth pigweed), *A. retroflexus* (redroot pigweed), *A. spinosus* (spiny amaranth), *Ambrosia* (ragweed), *Arctium minus* (lesser burdock), *Atriplex micrantha* (halberdleaf orach), *Bassia scoparia* (burning bush, kochia), *Chenopodium album* (common lambsquarters), *Chrysanthemum* (chrysanthemum, mum), *Cichorium intybus* (chicory), *Clivia miniata* (bush lily, kaffir lily), *Datura stramonium* (jimsonweed), *Eleusine indica* (crowfoot grass, goosegrass), *Eustoma russellianum* (lisianthus, prairie gentian), *Geranium carolinianum* (Carolina geranium), *Hippeastrum* hybrids (amaryllis), *Iris* spp. (iris), *Iris × hollandica* (Dutch iris), *Lactuca serriola* (prickly lettuce), *Lilium* hybrids (lily), *Nicotiana benthamiana* (Bentham's tobacco), *Nuttallanthus canadensis* (blue toadflax), *Pelargonium × hortorum* (zonal geranium), *Portulaca oleracea* (common purslane), *Rosa* (rose), *Rumex crispus* (curly dock), *Scindapsus* (pothos), *Setaria viridis* (green foxtail), *Sonchus asper* (spiny sowthistle), *Taraxacum officinale* (common dandelion), *Tribulus terrestris* (puncturevine), *Vicia sativa* (common vetch) (CABI, 2025; EPPO, 2025).

Symptoms: IYSV symptoms include diamond-shaped lesions that are yellow, light green, or straw colored, sometimes becoming necrotic, on the leaves, scapes, and bulb foliage of onions and other Allium hosts. At the onset of infection, lesions appear as oval spots with concentric rings, and necrotic patches may contain small "green islands." These typically form at sites where thrips have fed. As the disease progresses, infected foliage bends or collapses at the lesion site, especially later in the growing season. When infections occur early, they can significantly reduce yield, while later infections still compromise bulb quality, as heavily diseased crops senesce early and entire fields may brown and collapse. The intensity of disease expression is influenced by host cultivar, infection timing, plant health at infection, and environmental factors (Gent et al., 2004). Symptom incidence typically increases after bulb initiation (Gent et al., 2006). Although IYSV seldom kills its hosts, it diminishes plant vigor by disrupting photosynthesis and decreasing bulb size, while also predisposing plants to secondary pests and pathogens. Seed onion crops are similarly affected, producing lower seed yield and quality (Evans and Frank, 2009; Pappu et al., 2009).

Transmission: The virus is transmitted by *Thrips tabaci* (onion thrips) and, with less efficiency, by *Frankliniella fusca* (tobacco thrips) (Srinivasan et al., 2012). Both of these species are present in California. The thrips acquire the virus as larvae and then transmit it to other plants as they feed. The virus can overwinter in volunteer plants and weed hosts, which can then act as early-season sources of infection for crops (Bag et al., 2015). Viruliferous thrips can be moved with hosts or non-hosts of IYSV to new areas. Infected seedling transplants are also a source of inoculum for onion fields (Hsu et al., 2011). The virus is not seedborne nor does it survive in the soil (Gent et al., 2006; Pappu et al., 2009). IYSV has been shown to accumulate in some onion bulbs. Robène-Soustrade et al. (2006) reported that 27% of onion bulbs were infected in onion bulb- and seed-production fields, meaning that there is the potential for spread of IYSV by the distribution of infected or culled bulbs.

Damage Potential: Iris yellow spot virus is most damaging to high-value onion crops, where it can reduce bulb size and seed yields (Gent et al., 2004) and may cause crop losses of up to 100% (Pozzer et

al., 1999). Du Toit (2005) showed that among 46 onion cultivars tested, 43 suffered marked reductions in yield and bulb size. Infection weakens the seed-bearing stems, causing them to lodge, or fall over, effectively destroying seeds crops. The ability of thrips to develop very large populations on onion in short periods of time may strongly influence epidemics of iris yellow spot. Onion is a preferred host for *T. tabaci*, and this vector is a major pest of onion wherever it is grown (Lewis, 1997).

Worldwide Distribution: Africa: Egypt, Ethiopia, Kenya, Mauritius, South Africa, Reunion, Uganda, Zimbabwe. America: Brazil, Canada, Chile, Costa Rica, Ecuador, Guatemala, Mexico, Peru, United States of America (Arizona, California, Colorado, Georgia, Hawaii, Idaho, Michigan, Nevada, New Mexico, New York, Oregon, Pennsylvania, Texas, Utah, Washington, Uruguay). Asia: China, Indonesia, India, Iran, Islamic Republic of, Israel, Japan, Pakistan, Sri Lanka, Tajikistan. Europe: Austria, Bosnia and Herzegovina, Czechia, France, Germany, Greece, Italy, the Netherlands, Slovenia, Spain, the United Kingdom. Oceania: Australia, New Zealand (EPPO, 2025).

Official Control*:* Iris yellow spot virus is on the EPPO's A1 list for Argentina, and a quarantine pest in Tunisia (EPPO, 2025). It is on the USDA PCIT's harmful organisms list for Argentina, India, Japan, Nicaragua, the Republic of Korea, and the Republic of North Macedonia (USDA-PCIT, 2025).

California Distribution: Colusa, Imperial, San Joaquin, San Luis Obispo, Solano, and Yolo counties (CDFA PDR database, 2025; French, 1989).

California Interceptions: none

The risk that Iris yellow spot virus would pose to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** This disease is likely to be found wherever its hosts are grown. Places where thrips populations are high, and where there are overwintering weed hosts present, it is likely to be more prevalent.

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

   Score: **3**
   - 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:** IYSV has a relatively broad host range, including cultivated and wild onions, garlic, chives, leeks, and several ornamentals. Some weeds are infected by IYSV by thrips and may serve as reservoir hosts for the virus.

   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 virus can reproduce in the plant host and inside the *Thrips* vectors that can fly.

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:** This virus reduced the growth of onion bulbs and seed production. It is a quarantine pest in some countries. It is vectored by Thrips that feed on the plants.

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

Economic Impact: A, B, 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:** This virus can cause symptoms on several commonly grown ornamental hosts, including iris, lily and lisianthus.

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 Iris yellow spot virus*:* High

Add up the total score and include it here. **14**
-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 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* ***= 11***

Uncertainty:

none

Conclusion and Rating Justification:

Based on the evidence provided above, the proposed rating for **Iris yellow spot virus is C.**

References:

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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.

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*Comment Period: 09/30/2026 through 11/14/2026

*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: C