

California Pest Rating Proposal

Thysanofiorinia leei Williams: lychee scale

Hemiptera: Diaspididae

Current Rating: Q

Proposed Rating: A

Comment Period: **8/18/2020 – 10/2/2020**

Initiating Event:

Thysanofiorinia leei was reported from four counties in Florida in 2019. It therefore may be present on nursery stock or fruit from that state shipped to California. Therefore, a pest rating proposal is needed to assess the risk this insect poses to California.

History & Status:

Background: Adult *Thysanofiorinia leei* are tiny; adult females are approximately 0.7 mm long (García et al., 2016). The adult female is pupilarial (remains inside the exuvium of the final immature instar) (García et al., 2016). Reported hosts include *Litchi chinensis*, *Nephelium* species, and *Dimocarpus longan*; all of these are in the Sapindaceae subfamily Sapindoideae (Evans and Dooley, 2013; García et al., 2016).

Thysanofiorinia leei was found on lychee in Florida and it was reported from four counties in that state. No information was found on any economic impacts caused by this pest.

Worldwide Distribution: *Thysanofiorinia leei* is reported from Hong Kong, India, Taiwan, and the United States (Florida) (Ahmed and Miller, 2019; Martin and Lau, 2011; Takagi et al., 1989).

Official Control: *Thysanofiorinia leei* is considered reportable by the USDA (U.S. regulated plant pest table).

California Distribution: *Thysanofiorinia leei* is not known to be in California.

California Interceptions: *Thysanofiorinia leei* was found on a *Litchi chinensis* plant at a San Diego nursery in 2006 (California Department of Food and Agriculture).

The risk *Thysanofiorinia leei* poses to California is evaluated below.

Consequences of Introduction:

- 1) **Climate/Host Interaction:** The reported hosts of *T. leei* are limited to a very small portion of southern California. In addition, this scale appears to be restricted to areas with a tropical or subtropical climate. If it can become established in California, it is likely to be limited to a very small portion of southern California. Therefore, it receives a **Low (1)** in this category.
 - **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:** *Thysanofiorinia leei* has only been reported from three genera in one subfamily of Sapindaceae. Therefore, it receives a **Low (1)** in this category.
 - **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 and Dispersal Potential:** *Thysanofiorinia leei* could be moved on infested nursery stock. Therefore, it receives a **Medium (2)** in this category.
- 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.** *Thysanofiorinia leei* is only known to attack three tropical/subtropical fruit trees on the family Sapindaceae, including lychee. There may be very limited lychee production in southern California. However, no information was found suggesting this scale is a significant pest of these hosts anywhere in the world. It is (at the time of this writing) USDA reportable, and the presence of it on fruit or nursery stock could limit trade. Therefore, it receives a **Low (1)** in this category.

Economic Impact: C

- A. The pest could lower crop yield.
- B. The pest could lower crop value (includes increasing crop production costs).
- C. The pest could trigger the loss of markets (includes 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: Low

- **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.** All of the reported hosts of *T. leei* are in a subfamily (Sapindoideae) that does not include any species native to California (R. Price, pers. comm.). Other genera in the family Sapindaceae, including *Acer*, that are represented by native California species are not reported hosts. The presence of this scale in California could trigger private treatments of fruit trees and it could affect backyard fruit tree plantings. Therefore, *T. leei* receives a **High (3)** in this category.

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

Environmental Impact: D, 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: High (3)

– 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 *Thysanofiorinia leei*: Low (8)

Add up the total score and include it here.

–**Low = 5-8 points**

–Medium = 9-12 points

–High = 13-15 points

6) **Post Entry Distribution and Survey Information:** *Thysanofiorinia leei* is not known to be present in California. It receives a **Low (0)** in this category.

–**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.

Final Score:

7) The final score is the consequences of introduction score minus the post entry distribution and survey information score: Low (8)

Uncertainty:

Thysanofiorinia leei could attack new host plant species in California that it has not been previously exposed to.

Conclusion and Rating Justification:

Thysanofiorinia leei is not known to be present in California. It does not appear to have been reported to be a significant pest anywhere in the world. It does not appear to pose a serious threat to California's environment or agriculture. However, its presence here might impact trade, and specialty fruit production and backyard fruit trees may be impacted. For these reasons, an "A" rating is justified.

References:

Ahmed, M. A. and Miller, D. 2019. *Thysanofiorinia leei* (Diaspididae: Coccoomorpha: Hemiptera), lychee leei scale, a new U.S. continental record in Florida and potential pest of Florida lychee. Florida Department of Agriculture and Consumer Services, Division of Plant Industry.

Calflora. Accessed June 29, 2020:

<https://www.calflora.org/>

California Department of Food and Agriculture. Pest and damage record database. Accessed June 29, 2020:

<https://pdr.cdfa.ca.gov/PDR/pdrmainmenu.aspx>

Evans, G. A. and Dooley, J. W. 2013. 18. Potential invasive species of scale insects for the USA and Caribbean basin. pp. 320-341 in (K. Peña, ed.) Potential Invasive Pests of Agricultural Crops.

García, M., Denno, B., Miller, D., Miller, G., Ben-Dov, Y. and Hardy, N. 2016. ScaleNet: A literature-based model of scale insect biology and systematics. Database. doi: 10.1093/database/bav118.

<http://scalenet.info>. Accessed July 14, 2020:

<http://scalenet.info/catalogue/Thysanofiorinia%20leei/>

Martin, J. H. and Lau, S. K. 2011. The Hemiptera-Sternorrhyncha (Insecta) of Hong Kong, China-an annotated inventory citing voucher specimens and published records. Zootaxa 2847:1-122.

Takagi, S., Pong, T. Y., and S. G. Khoo. 1989. Beginning with *Diaulacaspis* (Homoptera: Coccoidea: Diaspididae): Convergence or effect? Insecta Matsumurana (New Series) 42:143-199.

U.S. regulated plant pest table. Accessed July 15, 2020:

<https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/rppl/rppl-table>

Responsible Party:

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***Comment Period: 8/18/2020 – 10/2/2020**

***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: A