CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

# California Pest Rating Profile

## *Lepidosaphes tokionis* (Kuwana): croton mussel scale

## Hemiptera: Diaspididae

## Pest Rating: A

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**Comment Period: 01/20/2022 – 03/06/2022**

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### Initiating Event:

*Lepidosaphes tokionis* is occasionally intercepted on cut foliage and flowers from Hawaii and Ecuador (California Department of Food and Agriculture). It has not been rated. A pest rating proposal is needed.

### History & Status:

**Background:** *Lepidosaphes tokionis* has been reported from plants in seven families: **Araceae** (including *Anthurium* sp.), **Asparagaceae** (including *Cordyline terminalis* and *Dracaena* sp.), **Euphorbiaceae** (including *Codiaeum variegatum* and *Croton* sp.), **Malvaceae** (*Gossypium* sp.), and **Moraceae** (including *Ficus* sp.), **Rutaceae** (*Citrus maxima*), and **Solanaceae** (*Capsicum* sp.) (Beardsley, 1966; Matsubara and Umesawa, 1971; Nakahara, 1981; Suh and Bombay, 2015; Watson, 2002; Williams and Watson, 1988).

Matsubara and Umesawa (1971) reported this scale to be restricted to *Codiaeum* and to occur in "heavy" infestations. Swaine (1971) reported that occasional heavy infestations in Fiji may damage *Codiaeum* by drying the tissues. Williams and Watson (1988) stated that the main host for this scale is *Codiaeum*. Malumphy (2014) reported "huge populations" on *Codiaeum variegatum* on Saint Lucia. However, Miller et al. (2005) reported this scale to not be a pest.

**Worldwide Distribution:** *Lepidosaphes tokionis* is reported from: **Africa:** Seychelles; **Asia:** Japan, Laos, Taiwan, and Thailand; **North America:** United States (Mississippi); **Caribbean:** Puerto Rico, Saint Lucia; **Oceania:** Hawaii, Fiji, Papua New Guinea, Tonga, Western Samoa; **South America:** Venezuela (D'Ascoli, 1971; Germain et al., 2009; Malumphy, 2014; Matsubara and Umesawa, 1971; Miller, 2005; Miller et al., 2005; Nakahara, 1981; Suh and Bombay, 2015; Takagi, 1969; Williams and Watson, 1988). It is also reported in greenhouses, for example, in Poland (Łagowska and Golan, 2020).

**Official Control:** *Lepidosaphes tokionis* is considered reportable by the United States Department of Agriculture (U.S. regulated plant pest table).

**California Distribution:** *Lepidosaphes tokionis* is not known to be present in California.

**California Interceptions:** *Lepidosaphes tokionis* is occasionally intercepted on cut foliage and flowers from Hawaii and Ecuador (California Department of Food and Agriculture).

The risk *Lepidosaphes tokionis* poses to California is evaluated below.

## Consequences of Introduction:

1) **Climate/Host Interaction:** *Lepidosaphes tokionis* feeds on plants in at least seven families. It has been recorded mostly from subtropical and tropical areas, but also from some temperate areas. It appears likely it would be limited to warmer parts of California, including the southern and central areas. Therefore, *L. tokionis* receives a **Medium (2)** 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:** *Lepidosaphes tokionis* is known to feed on plants in at least seven families. Therefore, it receives a **Medium (2)** 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:** *Lepidosaphes tokionis* can be moved with infested plant material. 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**. This insect is known to occur in large numbers in some cases, and feeding by hard scales is known to impact plants and cause chlorosis of foliage. Heavy infestations of *L. tokionis* were reported to cause drying of tissues. *Codiaeum*, one of the most important hosts, is a common ornamental plant in California. This scale is known to be associated with nursery stock, and it could increase production costs and decrease yield of nursery plants and possibly other crops (for example, citrus) in warm and temperate areas. Therefore, it receives a **Medium (2)** in this category.

**Economic Impact: A, B**

**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: Medium**

– 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**. There are native California plants in the family Euphorbiaceae that could possibly be attacked by *L. tokionis*. This scale could also trigger treatments and impact ornamental plantings in warm and temperate parts of California. Therefore, *L. tokionis* receives a **High (3)** in this category.

**Environmental Impact: A, 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 *Lepidosaphes tokionis*: Medium (11)

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:** *Lepidosaphes tokionis* is not known to be established in California. It receives a **Not established (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: Medium (11)

## Uncertainty:

There are no ongoing surveys for *L. tokionis*, so it is possible that this scale is already established in California. It is possible that it may not be able to thrive in California for climatic reasons. Lastly, little specific information was found on damage caused by this scale.

## Conclusion and Rating Justification:

*Lepidosaphes tokionis* is a scale that that may pose a threat to native and ornamental plants and possibly some crops, such as citrus, in California. It is not known to be established in this state. For these reasons, an "A" rating is justified.

## References:

Beardsley Jr., J. W. 1966. Insects of Micronesia. Homoptera: Coccoidea. Insects of Micronesia 6:377-562.

California Department of Food and Agriculture. Pest and damage record database. Accessed November 29, 2021: https://pdr.cdfa.ca.gov/PDR/pdrmainmenu.aspx

D'Ascoli, A. 1971. The armored scale insects of Venezuela (Homoptera: Coccoidea: Diaspididae). Ph.D. thesis, Virginia Polytechnic Institute and State University, Blacksburg, Virginia.

Germain, J. -F., Attié, M., Barbet, A., Franck, A., and Quilici, S. 2009. New scale insects recorded for the Comoros and Seychelles islands. pp. 129-135 *in* Branco, M., Franco, J. C., and Hodgson, C. (eds.) Proceedings of the XI International Symposium on Scale Insect Studies. ISA Press, Lisbon.

Łagowska, B. and Golan, K. 2020. An updated annotated checklist of scale insects (Hemiptera, Sternorrhyncha, Coccomorpha) of Poland. Zookeys. 918:65-81.

Malumphy, C. 2014. An annotated checklist of scale insects (Hemiptera: Coccoidea) of Saint Lucia, Lesser Antilles. Zootaxa 3846:69-86.

Matsubara, Y. and Umesawa, K. 1971. A preliminary revision of the Coccoidea-fauna of the Ogasawara (Bonin) Islands (Homoptera: Coccoidea). Applied Entomology and Zoology 6:11-26.

Miller, D. R. 2005. Selected scale insect groups (Hemiptera: Coccoidea) in the southern region of the United States. Florida Entomologist 88:482-501.

Miller, D. R., Miller, G. L., Hodges, G. S., and Davidson, J. A. 2005. Introduced scale insects (Hemiptera: Coccoidea) of the United States and their impact on U.S. agriculture. Proceedings of the Entomological Society of Washington 107:123-158.

Nakahara, S. 1981. List of the Hawaiian Coccoidea (Homoptera: Sternorhyncha). Proceedings of the Hawaiian Entomological Society 23:387-424.

Suh, S. -J. and Bombay, K. 2015. Scale insects (Hemiptera: Coccoidea) found on dracaena and ficus plants (Asparagales: Asparagaceae, Rosales: Moraceae) from southeastern Asia. Insecta Mundi 448:1-10.

Swaine, G. 1971. Agricultural Zoology in Fiji. Overseas Research Publication 18:1-424.

Takagi, S. 1969. Diaspididae of Taiwan based on material collected in connection with the Japan-U.S. co-operative science programme, 1965. Insecta

U.S. regulated plant pest table. Accessed December 20, 2021: https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/rppl/rppl-table

Watson, G. W. 2002. Arthropods of Economic Importance: Diaspididae of the World. Accessed December 22, 2021: https://diaspididae.linnaeus.naturalis.nl/linnaeus_ng/app/views/introduction/topic.php?id=3377&epi=155

Williams, D. J. and Watson, G. W. 1988. The Scale Insects of the Tropical South Pacific Region. Pt. 1. The Armoured Scales (Diaspididae). CAB International Wallingford, United Kingdom.

## Responsible Party:

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***Comment Period: 01/20/2022 – 03/06/2022**

***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.

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**Pest Rating: A**