CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Profile

Hemiberlesia diffinis (Newstead): a hard scale

Hemiptera: Diaspididae

Pest Rating: A

Comment Period: 06/08/2022 – 07/23/2022

Initiating Event:

Hemiberlesia diffinis has been intercepted on plant material from Florida. It has not yet been rated. A pest rating proposal is needed.

History & Status:

Background: *Hemiberlesia diffinis* has been reported on the following host plants: **Anacardiaceae:** *Spondias* sp.; **Annonaceae:** *Annona* sp.; **Apocynaceae:** *Plumeria* sp.; **Araceae:** *Philodendron* sp.; **Arecaceae:** *Cocos* sp.; **Asparagaceae:** *Dracaena* sp.; **Burseraceae:** *Bursera* sp.; **Callophylaceae:** *Mammea* sp.; **Euphorbiaceae:** *Hevea* sp., *Jatropha* sp., *Manihot* sp.; **Fabaceae:** *Cassia* sp., *Drepanocarpus* sp., *Erythrina* sp.; **Lauraceae:** *Persea americana*; **Lecythidaceae:** *Couroupita* sp.; **Lythraceae:** *Punica* sp.; **Malvaceae:** *Hibiscus* sp., *Theobroma* sp.; **Myrtaceae:** *Psidium* sp.; **Orchidaceae:** *Oncidium* sp.; **Rosaceae:** *Prunus* sp. (Evans et al., 2009; Miller and Davidson, 1998).

No reports were found of *H. diffinis* causing economic damage to crops. However, Hernández-Rivero et al. (2013) mentioned that the presence of scales (which included *H. diffinis*) on avocado fruit required management to maintain the appearance for market.

Worldwide Distribution: *Hemiberlesia diffinis* is reported from: **Caribbean:** Curaçao, Dominica, Jamaica; **Central America:** Costa Rica, El Salvador, Guatemala, Nicaragua, Panama; **North America:** Mexico, United States (Alabama, Florida); **South America:** Brazil, Colombia, Ecuador, Guyana, Peru (Evans et al., 2009; Miller and Davidson, 1998; Peña, 2003; Waltman et al., 2016).

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

California Distribution: *Hemiberlesia diffinis* is not known to be established in California (California Department of Food and Agriculture).

California Interceptions: *Hemiberlesia diffinis* has been intercepted on plant material from Florida (California Department of Food and Agriculture).

The risk *Hemiberlesia diffinis* poses to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** *Hemiberlesia diffinis* is reported from areas with a tropical or subtropical climate. Climate may limit the potential distribution of this scale to warmer parts of the state. This scale is polyphagous and suitable host plants are probably widespread in California. Therefore, it 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:** *Hemiberlesia diffinis* is polyphagous. Therefore, it receives a **High (3)** 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:** *Hemiberlesia diffinis* could 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:** No reports were found of *H*. *diffinis* having economic impacts. It is known to occur on crops, including avocado, and its reported host genera include those that contain stone fruits and pomegranate. It is considered reportable by the United States Department of Agriculture, and the presence of this scale in California could result in the loss of markets. It could raise production costs in nurseries. Therefore, it receives a **Medium (2)** in this category.

Economic Impact: B, 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: 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:** *Hemiberlesia diffinis* is polyphagous and it could impact ornamental plantings and gardens. Infestations could trigger treatments. Therefore, *H. diffinis* receives a **High (3)** in this category.

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 *Hemiberlesia diffinis*: Medium (12)

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:** *Hemiberlesia diffinis* 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 (12)

Uncertainty:

There is some uncertainty regarding the potential for *H. diffinis* to become established in California. There is also uncertainty regarding the potential of this species to have impacts in the state if it does become established here. No reports were found of this species of scale having economic impacts. However, it is possible that impacts have occurred but were not ascribed to this species because of mixed infestations of multiple scale species.

Conclusion and Rating Justification:

Hemiberlesia diffinis is a scale that is not known to be established in California. It feeds on a wide variety of plants, and it is considered reportable by the United States Department of Agriculture. For these reasons, an “A” rating is justified.

References:

California Department of Food and Agriculture. Pest and damage record database. Accessed March 16, 2022: https://pdr.cdfa.ca.gov/PDR/pdrmainmenu.aspx

Evans, G. A., Watson, G. W., and Miller, D. R. 2009. A new species of armored scale (Hemiptera: Coccoidea: Diaspididae) found on avocado fruit from Mexico and a key to the species of armored scales found on avocado worldwide. Zootaxa 1991:57-68.

Miller, D. R. and Davidson, J. A. 1998. A new species of armored scale (Hemiptera: Coccoidea: Diaspididae) previously confused with *Hemiberlesia diffinis* (Newstead). Proceedings of the Entomological Society of Washington 100:193-201.

Hernández-Rivero, R., Arévalo- Galarza, M. L. C., Valdovinos-Ponce, G., González-Hernández, H., Valdez-Carrasco, J., and Ramírez-Guzmán, M. E. 2013. Histología del daño en fruto y rama de aguacate 'Hass' por escamas armadas (Hemiptera: Diaspididae). Revista Mexicana de Ciencias Agrícolas 4:739-752.

Peña, J. E. 2003. Pests of avocado in Florida. pp. 487-494 *in* Proceedings V World Avocado Congress. Junta de Andalucía. Andalucía, Spain.

U.S. regulated plant pest table. Accessed March 16, 2022: https://www.aphis.usda.gov/aphis/ourfocus/planthealth/import-information/rppl/rppl-table

Waltman, K. G., Ray, C. H., Jr., Williams, M. L. 2016. The armored scale insects (Hemiptera Diaspididae) of Alabama. Redia 99:229-231.

Responsible Party:

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***Comment Period: 06/08/2022 – 07/23/2022**

***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.

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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: A