CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Profile for

Aphis punicae Passerini: pomegranate aphid

Hemiptera: Aphididae

Pest Rating: A

Comment Period: 05/23/2024 – 07/07/2024

Initiating Event:

Aphis punicae was found in a nursery inspection in Los Angeles County in 2023 (CDFA). Therefore, a pest rating proposal is needed.

History & Status:

Background: *Aphis punicae* Passerini, 1863 feeds on leaves, flowers, and fruit of pomegranate (Yaghobi et al., 2018). It is also recorded from *Duranta plumieri* and *Lantana camara* (Verbenaceae), *Bignonia* sp. and *Campsis radicans* (Bignoniaceae), and *Plumbago capensis* (Plumbaginaceae) (Blackman and Eastop, 2006).

It is reported to cause "fumagine" (apparently sooty mold) on pomegranate in Turkey and is considered an important pest there (Gülmez et al., 2022). In insecticide trials in India, greater abundance of *A. punicae* was associated with lower yield (Kambrekar and Biraradar, 2015).

The species *Aphis punicae* includes aphids previously referred to as *Aphis durantae* Theobald, 1917, *Aphis durranti* Das, 1918, *Aphis punicae* Shinji, 1922, and *Aphis punicella* Theobald, 1915, all of which are junior taxonomic synonyms.

Worldwide Distribution: **Asia:** India (Karnataka and Maharashtra), Iran, Iraq, Saudi Arabia, Turkey (Al-Saffar and Augul, 2020; Alotaibi et al., 2022; Dongarjal et al., 2021; Gülmez et al., 2022; Kambrekar and Biradar, 2015; Yaghobi et al., 2018).

Official Control: *Aphis punicae* is considered a quarantine pest in Brazil (EPPO Global Database).

California Distribution: *Aphis punicae* is not known to be established in California.

California Interceptions: *Aphis punicae* was found in a nursery inspection in Los Angeles County in 2023 (California Department of Food and Agriculture).

The risk *Aphis punicae* poses to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** *Aphis punicae* is found in areas with a variety of climates, including subtropical and Mediterranean. It feeds on pomegranate, a crop and widely-grown garden tree in California. Therefore, it receives a **High (3)** 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:** *Aphis punicae* has reported hosts in several plant 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:** *Aphis punicae* can presumably fly. 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:** *Aphis punicae* is reported to cause sooty mold and to reduce yield of pomegranate, a crop worth $131 million in California in 2021 (California Agricultural Statistics Review). 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:** *Aphis punicae* could trigger treatments and it could impact house/garden plantings. Therefore, *A. punicae* 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 *Aphis punicae*: 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:** *Aphis punicae* 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:

This aphid may be established in California.

Conclusion and Rating Justification:

Aphis punicae is a pomegranate pest that is not known to be established in California. It is reported to cause sooty mold and decrease yield. Pomegranate is a valuable crop in California and is also a popular garden and yard tree. For these reasons, an "A" rating is justified.

References:

Al-Saffar, H. H. and Augul, R. S. 2020. Survey of the insect pests from some orchards in the middle of Iraq. Plant Archives 20:4119-4125.

Alotaibi, S. S., Darwish, H., Alzahrani, A. K., Alharthi, S., Alghamdi, A. S., Al-Barty, A. M., Helal, M., Maghrabi, A., Baazeem, A., Alamari, H. A., and Noureldeen, A. 2022. Environment-friendly control potential of two citrus essential oils against *Aphis punicae* and *Aphis illinoiensis* (Hemiptera: Aphididae). Agronomy https://doi.org/10.3390/agronomy12092040

Blackman, R., Eastop, V. 2006. Aphids on the World's plants. Accessed May 7, 2024: https://aphidsonworldsplants.info/

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California Department of Food and Agriculture. Pest and damage record database. Accessed September 15, 2023: https://pdr.cdfa.ca.gov/PDR/pdrmainmenu.aspx

Dongarjal, R. P., Bhagas, N. V., Solanki, R. D., and Ilyas, M. D. 2021. Seasonal incidence of aphids (*Aphis punicae*) on pomegranate. Journal of Entomology and Zoology Studies 9:330-333.

EPPO Global Database. Accessed April 29, 2024: https://gd.eppo.int/taxon/APHIPU/categorization

Gülmez, M., Çalişkan, K., Kaplan, M., and Ulusoy, M. R. 2022. Determination of pest insect species at pomegranate (*Punica granatum* L.) orchards in Adiyaman and Siirt Provinces, Turkey. KSÜ Tarim ve Doğa Derg 25:677-686.

Kambrekar, D. N. and Biradar, A, P. 2015. Field efficacy of insecticides in the management of pomegranate aphid, *Aphis punicae* (Passerini). pp. 153-160 in (Zhaohe Yuan et al., eds) Proceedings of the third International Symposium on Pomegranate and Minor Mediterranean fruits. Acta Hort. 1089, ISHS 2015.

Yaghobi, A., Rajabpour, A., and Zandi Sohani, N. 2018. Population abundance of pomegranate aphid, *Aphis punicae* (Homoptera: Aphididae), predators in Southwest of Iran. Journal of Entomological and Acarological Research doi:10.4081/jear.2018.7583

Responsible Party:

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*Comment Period: 05/23/2024 – 07/07/2024

*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: A