

## California Pest Rating Proposal

### *Dichomeris acuminatus* (Staudinger): alfalfa leaftier

#### Lepidoptera: Gelechiidae

Current Rating: Q

Proposed Rating: B

---

Comment Period: **12/17/2021 – 01/31/2022**

---

#### Initiating Event:

Dr. Apurba Barman (University of California Cooperative Extension) found *D. acuminatus* in an alfalfa field in Holtville (Imperial County) on October 16, 2021 and he brought this to the attention of CDFA. Dr. Marc Epstein, Senior Biosystematist for Lepidoptera at Plant Pest Diagnostics Branch confirmed the identity of this species by dissecting male and female specimens. Likewise, the samples sent by Dr. Barman were confirmed as the same species by molecular methods at PPDB the following week. Furthermore, in response to this find, Joe Andreotti (Imperial County) collected *D. acuminatus* larvae and pupae in alfalfa fields in three Imperial County locations: Holtville on October 22, 2021, El Centro on November 17, 2021, and Brawley on December 1, 2021. These finds were confirmed with molecular methods and represents the first official CDFA records of this species in California (California Department of Food and Agriculture).

#### History & Status:

**Background:** *Dichomeris acuminatus* is a small moth whose larva feeds on leaves. The larvae “tie” leaves together to form a shelter. Feeding is reported to cause defoliation of alfalfa plants (Barman et al., 2021). Reported hosts, all in the family Fabaceae, include *Glycine* sp. (soybean), *Cajanus cajan*, *Cyamopsis* sp., *Desmodium gyroides*, *Dolichos angustifolius*, *Indigofera pseudotinctoria*, *Lotus pedunculatus*, *Medicago sativa*, *Sesbania sericea*, *Tephrosia* sp., *Trifolium repens*, and *T. pratense*.

(Bidzilya, 2021; Meena et al., 2018; Nunes, 2021; Ponomarenko, 1997). The number of generations per year is not known.

**Worldwide Distribution:** *Dichomeris acuminatus* is reported from Africa (including Kenya, Namibia, and South Africa), Asia (including Israel, Japan, China, India, Sri Lanka, and Taiwan), Europe (including Corsica, Croatia, France, Greece, Italy, Portugal, and Spain), North America (Arizona, California, and Florida), and Oceania (Australia and Hawaii) (Austin, 2010; Barman et al., 2021; Bella and Karsholt, 2015; Bidzilya, 2021; Bidzilya et al.; Karsholt and Huemer, 2017; Li et al., 2013; Meena et al., 2018; Nunes, 2021; J. Palumbo, pers. comm.; Ponomarenko, 1997; Requena, 2009; Šumpich, 2013).

**Official Control:** *Dichomeris acuminatus* is not known to be under official control anywhere.

**California Distribution:** *Dichomeris acuminatus* larvae were found in alfalfa fields at three locations in Imperial County in October 2021. These locations (Holtville, El Centro, and Brawley) are separated by approximately 10 miles (California Department of Food and Agriculture).

**California Interceptions:** *Dichomeris acuminatus* has not been intercepted in California (California Department of Food and Agriculture).

The risk *Dichomeris acuminatus* poses to California is evaluated below.

### **Consequences of Introduction:**

- 1) **Climate/Host Interaction:** *Dichomeris acuminatus* is found in areas with Mediterranean climate, and it is already present in Imperial County, California. This moth is reported to feed on numerous plants in the family Fabaceae, including alfalfa, soybean, and *Trifolium* species, which are widespread in California. *Dichomeris acuminatus* can likely establish a widespread distribution in California. Therefore, *D. acuminatus* 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:** *Dichomeris acuminatus* is reported to feed on multiple genera of plants in the family Fabaceae. 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:** *Dichomeris acuminatus* can 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.** *Dichomeris acuminatus* is reported to feed on at least two plants (alfalfa and soybean) of economic importance. It has been reported to cause damage to alfalfa in Arizona and California (A. Barman, pers. comm.; J. Palumbo, pers. comm.). California produced approximately \$1 billion in alfalfa hay in 2019 (California Agricultural Statistics Review). Therefore, *D. acuminatus* 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.** Two of the plant genera reported to be hosts of *D. acuminatus* are *Trifolium* and *Sesbania*. California has numerous native *Trifolium* species, including one endangered species (*T. trichocalyx*, Monterey clover), and one native *Sesbania* species (Calflora; California Department of Fish and Wildlife). Therefore, *D. acuminatus* receives a **High (3)** in this category.

**Environmental Impact: A, B**

- 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 *Dichomeris acuminatus*: 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:** *Dichomeris acuminatus* is established in Imperial County. It receives a **Low (-1)** 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 (10)

### **Uncertainty:**

There is uncertainty regarding the extent of agricultural and environmental damage likely to be caused by this pest.

## Conclusion and Rating Justification:

*Dichomeris acuminatus* is a moth that is reported to feed on plants in the family Fabaceae, including alfalfa and soybean. It poses a threat to the alfalfa industry. It could also impact native plants in California. *Dichomeris acuminatus* is established in Imperial County and the presence of this species in Arizona suggests that this moth may be more broadly distributed in southeastern California than currently known. For these reasons, a B rating is justified.

## References:

Austin, G. T. 2010. Scientific note: Moth community from a northcentral Florida location – a taxonomic checklist. *Tropical Lepidoptera Research* 20:41-44.

Barman, A., Palumbo, J., and Renthwisch, M. 2021. Alfalfa leaftier found for the first time in low desert alfalfa fields. Accessed November 3, 2021:  
<https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=50758>

Bella, S. and Karsholt, O. 2015. The Gelechiidae of the Longarini salt marsh in the “Pantani della Sicilia Sud-Orientale” nature reserve in southeastern Sicily, Italy (Lepidoptera: Gelechiidae). *SHILAP Revista de lepidopterología* 43:365-375.

Bidzilya, O., Karsholt, O., Kravchenko, V., and Sűmpich, J. 2019. An annotated checklist of Gelechiidae (Lepidoptera) of Israel with description of two new species. *Zootaxa* 4677:1-68.

Bidzilya, O. 2021. New host-plant records of Afrotropical Gelechiidae (Lepidoptera), with description of three new species. *Zootaxa* 4952:495-522.

California Agricultural Statistics Review. 2019-2020. Accessed November 3, 2021:  
[https://www.cdfa.ca.gov/Statistics/PDFs/2020\\_Ag\\_Stats\\_Review.pdf](https://www.cdfa.ca.gov/Statistics/PDFs/2020_Ag_Stats_Review.pdf)

California Department of Fish and Wildlife. Accessed November 3, 2021:  
<https://wildlife.ca.gov/Conservation/Plants/Endangered/Trifolium-trichocalyx>

California Department of Food and Agriculture. Pest and damage record database. Accessed October 6, 2021:  
<https://pdr.cdfa.ca.gov/PDR/pdrmainmenu.aspx>

Karsholt, O. and Huemer, P. 2017. Review of Gelechiidae (Lepidoptera) from Crete. *Linzer biologische Beiträge* 49:159-190.

Li, H., Zhen, H., Mey, W. 2013. Notes on *Dichomeris* Hübner, 1818 from Southern Africa and Kenya, with description of seven new species (Lepidoptera, Gelechiidae, Dichomeridinae). Zootaxa 3608:561-574.

Meena, A. K., Nagar, R., and Swaminathan, R. 2018. Occurrence of *Dichomeris acuminatus* (Staudinger) on soybean in Rajasthan. Indian Journal of Entomology DOI: 10.5958/0974-8172.2018.00275.4

Nunes, J. 2021. New records of Lepidoptera hostplants from Portugal (Insecta: Lepidoptera). SHILAP Revista de lepidopterología 49:5-19.

Ponomarenko, M. G. 1997. Catalogue of the subfamily Dichomeridinae (Lepidoptera, Gelechiidae) of the Asia. Far Eastern Entomologist 50:1-67.

Requena, E. 2009. Aproximació a la fauna dels gelè de Catalunya I Balears (Lepidoptera: Gelechiidae). Treballs de la Societat catalana de Lepidopterologia 16:5-77.

Šumpich, J. 2013. Faunistic records of some microlepidoptera from Croatia. Entomologia Croatica 17:13-33.

## Responsible Party:

Kyle Beucke, 1220 N Street, Sacramento, CA 95814, 916-698-3034, [permits\[@\]cdfa.ca.gov](mailto:permits[@]cdfa.ca.gov)

**\*Comment Period: 12/17/2021 – 01/31/2022**

### **\*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](mailto: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: B**