CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Proposal for

Diaporthe australafricana Crous & Van Niekerk 2011

Current Pest Rating: Z

Proposed Pest Rating: C

Kingdom: Fungi, Phylum: Ascomycota,
Subphylum: Pezizomycotina, Class: Sordariomycetes,
Subclass: Diaporthomycetidae, Order: Diaporthales,
Family: Diaporthaceae

Comment Period: 07/08/2025 through 08/22/2025

Initiating Event:

In 2016, the Contra Costa County Agricultural Commissioner's office submitted a homeowner sample of *Xylosma congestum* with canker symptoms to CDFA's Plant Pest Diagnostics Center. Plant Pathologist Suzanne Rooney-Latham detected the phomopsis stage of *Diaporthe australafricana* in culture. This was the first official detection of this pathogen in California, and it was assigned a Z-rating. This pathogen has not been through the pest rating process. The risk to California from *Diaporthe australafricana* is described herein, and a permanent rating is proposed.

History & Status:

Background:

The genus *Diaporthe* is a large and diverse group of filamentous ascomycete fungi. It includes many species that are important in agriculture, forestry, and ecology, with members having a wide range of ecological roles, from aggressive plant pathogens to endophytes and saprophytes (Gomes et al., 2013).

Many *Diaporthe* species are known for causing serious plant diseases, including stem cankers, fruit rots, pod and stem blight, and leaf spots. Historically, the asexual (anamorphic) stages of these fungi were classified under the genus *Phomopsis*, which was distinguished based on spore and pycnidia morphology. However, advances in molecular phylogenetics have shown that *Phomopsis* and *Diaporthe* species represent different life stages of the same fungal taxa. As a result, the use of the name *Diaporthe* now encompasses both the sexual and asexual forms, reflecting the modern "one fungus, one name" principle (Hawksworth, 2011).

Diaporthe australafricana was first described from grapevines (*Vitis vinifera*) showing symptoms of *Phomopsis* cane and leaf spot or dieback from Australia and South Africa, hence the name (Van Niekerk et al., 2011). It is recognized primarily as a plant pathogen associated with disease symptoms on various woody hosts, including fruit and nut trees (Guerrero, 2013). Like many species in the genus, *D. australafricana* can also exist as an endophyte, living in plant tissue without causing symptoms, until conditions become favorable for pathogenicity. It has also been detected in association with *Prunus* spp. and other woody hosts. *Diaporthe australafricana* cannot be reliably distinguished from closely related species by morphology alone. Multilocus sequencing (typically using ITS, TEF1-α, β-tubulin, and CAL) is required for accurate identification through a comprehensive phylogenetic analysis (Udayanga et al., 2014).

A survey of the diversity of *Diaporthe* species causing wood-canker diseases of fruit and nut crops in northern California was published by Lawrence et al., 2015. *Diaporthe* isolates were collected from wood cankers in vineyards, orchards (almond, apricot, pear), and from wild willows in riparian areas surrounding these cultivated crops. These researchers reported the first finding of *D. australafricana* in North America, including in grapevine, and extended its known host range to include almond and willow. In a walnut and almond orchard survey in San Joaquin, Stanislaus, and Merced counties, *D. australafricana* was recovered from spore traps and symptomatic tissues. It was identified among other *Diaporthe* species in these orchards (Nouri et al., 2021).

Hosts: Actinidia deliciosa (kiwifruit), *Corylus avellana* (hazelnut), *Corylus* sp., *Juglans regia* (walnut), *Persea americana* (avocado), *Prunus dulcis* (almond), *Salix* sp. (willow), *Vaccinium corymbosum* (blueberry), *Vaccinium* sp., *Vitis* sp., *Vitis vinifera* (grape) (Farr and Rossman, 2025). California detections were associated with these additional plants: *Arbutus menziesii* (Pacific madrone), *Arctostaphylos franciscana* (Franciscan manzanita), *Juglans* sp. (walnut), *Quercus macrocarpa* (bur oak), *Xylosma congestum* (shiny xylosma), with pathogenicity not confirmed (CDFA PDR database, 2025).

Symptoms: On blueberries, symptoms consisted of apical necrosis of the shoots and brown-to-reddish necrotic lesions on the stems. Internally, a brown-to-reddish discoloration of the vascular tissue can be observed. On grapes, symptomatic plants showed short internodes, weak shoots, small and chlorotic leaves, and cane and cordon dieback. Brown, irregular, hard cankers were observed in cross sections of diseased cordons (Diaz and Latorre, 2017). On walnuts, branch cankers associated with pruning wounds were observed by Jiménez Luna et al. (2020) on young trees. Isolates were recovered from the wood necrotic lesions, displaying a light to dark brown discoloration in the cortical and vascular tissue. Post-harvest fruit rot of kiwifruit, where fruits were decayed in cold storage, was attributed to *D. australafricana*, along with other *Diaporthe* species (Diaz et al., 2018).

Transmission: Diaporthe produces two types of asexual conidia spores, alpha conidia and beta conidia, within fruiting bodies called pycnidia. In some cases, it can also produce sexual spores (ascospores) within perithecia. The infectious spores are spread between nearby plants or within a plant by splashing irrigation water and rain. Long-distance spread of the spores is by air movement and movement of infected nursery stock. The spores infect bark wounds, such as those caused by frost,

pruning, or sunburn. The fungi can also infect young buds and then move down into the stem. Otherwise, healthy woody plants may harbor a minor infection that can go undetected until the shrub or tree becomes stressed, then the fungus becomes more active and noticeable disease symptoms develop. Hot summer weather suppresses the development of the *Phomopsis* stage and disease symptoms. The fungi become active again in late fall and winter (Dreistadt, 2016).

Damage Potential: Diaporthe australafricana causes stem canker and dieback, lesions on stems, and necrosis of blueberry shoots (Latorre et al., 2012). It was observed on 15% of plants in blueberry farms in central and southern Chile. In inoculation experiments, it was shown to be highly virulent in shoots, stems, and fruit of blueberry (Elfar et al., 2013). Cordon dieback of kiwifruit cultivar Hayward was observed in 16 orchards in Chile, and prevalence varied greatly from 5 to 75% (Diaz and Latorre, 2018). *Diaporthe/Phomopsis* cane and leaf spot is an important disease of grapevines, causing serious losses due to shoots breaking off at the base, stunting, dieback, loss of vigor, reduced bunch set, and fruit rot (Lawrence et al., 2015).

Worldwide Distribution: Australia, Chile, South Africa, United States (California) (Farr and Rossman, 2025).

Official Control*: Diaporthe australafricana* is on the USDA PCIT's harmful organisms list for Peru (USDA-PCIT, 2025).

California Distribution: Contra Costa, Sacramento, San Francisco, Santa Clara, Santa Cruz, and Sutter counties (CDFA PDR Database, 2025). UC Researchers report detections in Merced, Napa, San Benito, Solano, San Joaquin, and Stanislaus counties (Lawrence et al., 2015; Nouri et al., 2021).

California Interceptions: none

The risk that *Diaporthe australafricana* would pose to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** This pathogen is likely to be found wherever its hosts are grown.

   Evaluate if the pest would have suitable hosts and climate to establish in California.

   Score: **3**

   - Low (1) Not likely to establish in California, or likely to establish in very limited areas.
   - Medium (2) may be able to be established in a larger but limited part of California.
   - **High (3) likely to establish a widespread distribution in California.**

2) **Known Pest Host Range:** The host range includes plants in multiple families.

   Evaluate the host range of the pest.

   Score: 3

- 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 Potential:** This pathogen reproduces with airborne spores.

Evaluate the natural and artificial dispersal potential of the pest.

Score: 2
- 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:** Economic losses have been reported in multiple hosts, to plants, and to fruit. It is a quarantine pest in Peru.

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

Economic Impact: A, B, C.
A. The pest could lower crop yield.
B. The pest could lower crop value (including increasing crop production costs).
C. The pest could trigger the loss of markets (including 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: **3**
- 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:** California detections have been made from native plants, including willow, madrone, manzanita, and oak. Franciscan manzanita (*Arctostaphylos franciscana*) has been listed as endangered by the US Fish and Wildlife service since 2012.

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

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: 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 *Diaporthe australafricana:* High

Add up the total score and include it here**. 14**
-Low = 5-8 points
-Medium = 9-12 points
-High = 13-15 points

6) **Post-Entry Distribution and Survey Information**: Evaluate the known distribution in California. Only official records identified by a taxonomic expert and supported by voucher specimens deposited in natural history collections should be considered. Pest incursions that have been eradicated, are under eradication or have been delimited with no further detections should not be included.

Evaluation is 'Medium'.

Score: -2
-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 is 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.

7) The final score is the consequence of the introduction score minus the post-entry distribution and survey information score: (Score)

Final Score: *Score of Consequences of Introduction – Score of Post Entry Distribution and Survey Information* ***= 12***

Uncertainty:

Multiple species of *Diaporthe* can co-occur in the same orchards and vineyards. It can be difficult to estimate the economic damage caused by co-occurring species.

Conclusion and Rating Justification:

Based on the evidence provided above, the proposed rating for ***Diaporthe australafricana is*** **C.**

References:

Díaz, G.A. and Latorre, B.A., 2018. First report of cordon dieback of kiwifruits caused by *Diaporthe ambiqua* and *D. australafricana* in Chile. Plant Disease, 102(2), p.446.

Dreistadt, S.H., 2016. Pests of landscape trees and shrubs: an integrated pest management guide (Vol. 3359). UCANR Publications.

Elfar, K., Torres, R., Díaz, G. A., and Latorre, B. A. 2013. Characterization of *Diaporthe australafricana* and *Diaporthe* spp. associated with stem canker of blueberry in Chile. Plant Dis. 97:1042-1050.

Farr, D.F., and Rossman, A.Y. Fungal Databases, U.S. National Fungus Collections, ARS, USDA. *Diaporthe australafricana* Retrieved 6/13/2025, from https://nt.ars-grin.gov/fungaldatabases/

Gomes, R.R., Glienke, C., Videira, S.I.R., Lombard, L., Groenewald, J.Z. and Crous, P.W., 2013. *Diaporthe*: a genus of endophytic, saprobic and plant pathogenic fungi. Persoonia-Molecular Phylogeny and Evolution of Fungi, 31(1), pp.1-41.

Guerrero, J. 2013. First Report of *Diaporthe australafricana* Caused Stem Canker and Dieback in European Hazelnut (Corylus avellana L.) in Chile. Plant Disease, Volume 97, Number 12, Page 1657

Hawksworth, D.L., 2011. A new dawn for the naming of fungi: impacts of decisions made in Melbourne in July 2011 on the future publication and regulation of fungal names. IMA Fungus 2(2): 155–162.

Jiménez Luna, I., Cadiz, F., Aravena, R., Larach, A., Besoain, X., Ezcurra, E. and Rolshausen, P.E., 2020. First report of *Diaporthe cynaroidis* and *D. australafricana* associated with walnut branch canker in Chile. Plant Disease, 104(10), p.2732.

Latorre, B.A., Elfar, K., Espinoza, J.G., Torres, R., Díaz, G.A. 2012. First Report of *Diaporthe australafricana* Associated with Stem Canker on Blueberry in Chile. Plant Disease, May 2012, Volume 96, Number 5, Page 768

Lawrence, D.P., Travadon, R. and Baumgartner, K., 2015. Diversity of *Diaporthe* species associated with wood cankers of fruit and nut crops in northern California. Mycologia, 107(5), pp.926-940.

Nouri, M.T., Trouillas, F., Arnold, K. and Michailides, T., 2021. Investigating *Botryosphaeria/Phomopsis* diseases of walnut in San Joaquin and Stanislaus counties, California. https://my.ucanr.edu/sites/cawalnut/files/342549.pdf

Udayanga, D., Castlebury, L. A., Rossman, A. Y., and Hyde, K. D. 2014. Species limits in *Diaporthe*: molecular re-assessment of *D. citri, D. cytosporella, D. foeniculina* and *D. rudis*. Persoonia 32, 83-101

USDA Phytosanitary Certificate Issuance and Tracking System, Phytosanitary Export Database (PExD) Harmful Organisms Database Report. *Diaporthe australafricana* Accessed 6/13/2025.

Van Niekerk, J.M., Bester, W., Halleen, F., Crous, P.W. and Fourie, P.H., 2011. The distribution and symptomatology of grapevine trunk disease pathogens are influenced by climate. Phytopathologia Mediterranea, 50, pp. S98-S111.

Responsible Party:

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***Comment Period: 07/08/2025 through 08/22/2025**

***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: C