CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Profile for

Remotididymella destructiva

(Plowright) Valenzuela-Lopez, J.F. Cano, P.W. Crous, J. Guarro & Stchigel

Black spot of tomato

Pest Rating: B

Kingdom: Fungi, Phylum: Ascomycota,
Subphylum: Pezizomycotina, Class: Dothideomycetes,
Subclass: Pleosporomycetidae, Order: Pleosporales,
Family: Didymellaceae

Comment Period: 09/08/2026 through 10/23/2026

Initiating Event:

Remotididymella destructiva fungal pathogen that causes leaf, stem, flower, and fruit diseases of tomato and other solanaceous plants. It is an important pathogen for export certification of tomato seed. This pathogen has not been through the pest rating process. The risk posed by *R. destructiva* to California is described herein, and a permanent rating is proposed.

History & Status:

Background:

California tomatoes had a farm-gate value of approximately $1.64 billion in 2024 and ranked among the ten most valuable agricultural commodities produced in the state. The California tomato industry includes large acreages of processing tomatoes in the Central Valley, fresh-market production, and commercial transplant and seed-production systems (CDFA ag stats).

This pathogen was originally described by Plowright in 1881 as *Phoma destructiva* from diseased tomatoes. For more than a century, the pathogen was known almost exclusively under that name and was recognized as the causal agent of Phoma rot, black spot, and stem blight of tomato. Older literature, extension publications, and disease manuals therefore almost universally refer to the pathogen as *Phoma destructiva*, and this synonym remains common in agricultural publications despite

---

the current taxonomic placement (Boerema et al., 2004; Jones et al., 2014; Valenzuela-Lopez et al., 2018).

Species formerly classified within the broad anamorphic genus *Phoma* have undergone extensive taxonomic revision during the past two decades following the application of multigene phylogenetic analyses. These studies demonstrated that *Phoma* sensu lato was highly polyphyletic and that morphologically similar species belonged to numerous distinct evolutionary lineages within the *Didymellaceae* and related families. Consequently, many economically important plant pathogens were transferred into newly established genera that better reflect their evolutionary relationships (Aveskamp et al., 2010; Chen et al., 2017; Hou et al., 2020).

Remotididymella was established by Valenzuela-Lopez et al. (2018) during a comprehensive revision of clinically and agriculturally important coelomycetous fungi within the Didymellaceae and Cucurbitariaceae. The genus *Remotididymella* is a member of the family Didymellaceae (Pleosporales, Dothideomycetes), a large group of fungi that includes numerous plant pathogens, endophytes, and saprobes. The genus is characterized by multilocus phylogenetic analyses together with morphological characteristics of pycnidial conidiomata, conidiogenous cells, and conidia. *Remotididymella destructiva* was designated as the type species of the genus following transfer from *Phoma destructiva*, reflecting its distinct phylogenetic placement within the Didymellaceae rather than within *Phoma* sensu lato (Valenzuela-Lopez et al., 2018).

Remotididymella destructiva is a pathogen of solanaceous crops, with tomato (*Solanum lycopersicum*) as its principal host. The pathogen has also been reported from pepper (*Capsicum annuum*), eggplant (*Solanum melongena*) and potato (*Solanum tuberosum*), although tomato remains by far the best documented and economically most important host.

Hosts: Solanum lycopersicum (tomato) is the best-documented host. The fungus has also been reported from *Capsicum annuum* (pepper), *S. tuberosum* (potato), and *S. melongena* (eggplant). Some secondary sources indicate that additional members of Solanaceae may be susceptible, but the complete natural host range is not clearly defined. Because some older records were based only on morphological identification under the name *Phoma destructiva*, individual non-tomato host records may require molecular confirmation. Members of Didymellaceae can be difficult to distinguish using pycnidial and conidial morphology alone.

These hosts appear in the USDA Fungal Database: *Astronium urundeuva, Camellia oleifera, Capsicum annuum, C. annuum var. annuum, C. frutescens, Capsicum* sp., *Euphorbia caducifolia, Solanum lycopersicum, S. melongena, S. tuberosum,* and *Ziziphus jujuba* (Farr et al., 2026).

Symptoms: *Remotididymella destructiva* causes disease on multiple aboveground organs of susceptible hosts, including leaves, stems, petioles, flowers, and fruit. Disease severity varies with host susceptibility, isolate aggressiveness, and environmental conditions, but symptoms are generally most severe under prolonged periods of leaf wetness, moderate temperatures, and high relative humidity (Colmán et al., 2018; EPPO, 2026).

Leaf symptoms initially appear as small, circular to irregular, water-soaked or dark green lesions that rapidly become brown to dark brown. Lesions enlarge with age and often develop pale gray or tan centers surrounded by darker margins. Under favorable environmental conditions, lesions may coalesce, resulting in extensive blighting and premature senescence of leaves. Numerous black pycnidia develop within older lesions and are visible with a hand lens as minute, embedded fruiting bodies. The presence of abundant pycnidia is an important diagnostic feature distinguishing *R. destructiva* from several other foliar pathogens that produce superficially similar necrotic lesions (Boerema et al., 2004; Colmán et al., 2018).

Stem and petiole infections begin as elongated, dark brown to black lesions that may become slightly sunken. Lesions frequently develop at sites of mechanical injury, pruning wounds, broken trichomes, or insect damage, although infection may also occur directly through susceptible tissues when environmental conditions are favorable. As lesions expand, they may girdle petioles or stems, resulting in wilting, dieback, or collapse of individual shoots. Extensive stem infections can substantially reduce plant vigor and contribute to premature plant death (Boerema et al., 2004; Colmán et al., 2018).

Flowers are susceptible throughout development. Infected flowers develop brown to black necrotic lesions on sepals, petals and pedicels, frequently leading to flower blight, abortion and reduced fruit set. Experimental inoculations demonstrated that flower tissues were among the most susceptible organs, with rapidly expanding necrotic lesions developing within several days after inoculation under humid conditions (Colmán et al., 2018).

Fruit infection usually begins as small, circular, dark brown, water-soaked lesions that commonly develop at the blossom end, around cracks or wounds, or at other injured areas of the fruit surface. Lesions enlarge during disease development and become sunken, firm, and dark brown to black. Concentric zonation may develop in older lesions, and numerous pycnidia become embedded within affected tissues. Fruit rot may continue during harvest, storage, and transportation, reducing marketability and increasing postharvest losses (Boerema et al., 2004; Jones et al., 2014).

Disease symptoms may resemble those caused by *Alternaria solani*, *Stemphylium* spp. or other necrotrophic tomato pathogens during the early stages of infection. Consequently, visual diagnosis alone may be unreliable. Confirmation typically requires microscopic observation of the characteristic pycnidia and conidia or molecular identification using DNA sequence data because many species formerly classified within *Phoma* are morphologically similar (Aveskamp et al., 2010; Chen et al., 2017).

Transmission: Remotididymella destructiva reproduces asexually by producing conidia within globose pycnidia embedded in infected host tissues. Under humid conditions, mature pycnidia exude masses of conidia in a gelatinous matrix (cirrhi), which are dispersed primarily by splashing rain, overhead irrigation, and surface water. Splash dispersal is considered the principal mechanism of short-distance spread within fields and greenhouses, although conidia may also be spread mechanically on contaminated tools, workers, equipment, and infected plant material (Boerema et al., 2004; Aveskamp et al., 2010).

The pathogen infects susceptible aerial tissues when free moisture is present for extended periods. Moderate temperatures and prolonged leaf wetness favor conidial germination, penetration, and lesion development. Disease development is promoted by frequent rainfall, overhead irrigation, dense plant canopies, and high relative humidity, allowing repeated cycles of secondary infection during the growing season (Jones et al., 2014; Colmán et al., 2018).

Remotididymella destructiva survives between cropping cycles in infected crop debris, where pycnidia remain viable and serve as a source of primary inoculum. The fungus can also persist on infected volunteer plants and other susceptible hosts, enabling disease carryover between successive crops. Removal or rapid decomposition of infected residues reduces inoculum available for subsequent epidemics (Boerema et al., 2004; Jones et al., 2014).

The pathogen has been reported to be seedborne on tomato. Seed contamination provides a pathway for long-distance dissemination through commercial seed movement and may introduce the pathogen into previously uninfested production areas. Infected seedlings and transplants also represent an important means of pathogen movement because latent infections may not be apparent during propagation or transport (Munkvold, 2009; ISF, 2025).

Infected fruit may contribute to pathogen movement through commercial distribution or disposal of cull fruit. Although fruit are not considered the primary means of long-distance spread, pycnidia developing in infected tissues may produce viable conidia capable of initiating new infections when susceptible hosts and favorable environmental conditions are present (Jones et al., 2014).

No insect vectors have been reported. Natural spread depends primarily on water-mediated dispersal of conidia over short distances, while movement of contaminated seed, transplants, and infected plant material is responsible for long-distance dissemination. The literature supports that the fungus is seedborne or seed-associated, but evidence quantifying transmission from contaminated seed to diseased seedlings is limited.

Damage Potential: Remotididymella destructiva damages susceptible hosts by reducing photosynthetically active leaf area, causing stem cankers, flower blight, and fruit rot. Foliar lesions decrease functional leaf area, while severe infections may result in extensive blighting, premature defoliation, and reduced plant vigor. Stem infections may girdle petioles or shoots, causing wilting and dieback, and flower infections can reduce fruit set through blossom necrosis and abortion (Colmán et al., 2018; Jones et al., 2014).

Fruit rot is the most economically important phase of the disease. Lesions continue to enlarge after harvest under favorable environmental conditions, reducing marketability and increasing losses during storage, packing, and transportation. Infected fruit are unsuitable for the fresh market and may also reduce the quality of processed tomato products when disease incidence is high (Boerema et al., 2004; Jones et al., 2014).

Published reports describing major economic losses are relatively uncommon, suggesting that severe outbreaks are sporadic and dependent on favorable environmental conditions. Nevertheless, the

combination of foliar blight, stem infection, flower loss, and postharvest fruit decay demonstrates that *R. destructiva* has the potential to reduce both yield and fruit quality when infections become established early in crop development (Colmán et al., 2018; Boerema et al., 2004).

Worldwide Distribution: Africa: Libya, Malaysia, Mauritius, Nigeria, Sierra Leone, South Africa, Sudan, Zambia, and Zimbabwe. Asia: China, India, Japan, Korea, Papua New Guinea, Philippines, Taiwan. Central America: Costa Rica, Panama. Europe: Greece, Italy, Netherlands, Poland, United Kingdom. North America: Barbados, Canada, Cuba, Dominican Republic, Guadeloupe, Jamaica, Mexico, United States (Alabama, Florida, Hawaii, South Central states, Wisconsin). Oceana: Australia, Tonga. South America: Brazil (Farr et al., 2026).

Official Control: *Remotididymella destructiva* is on the USDA PCIT's Harmful Organisms list as *Phoma destructiva* for Bangladesh, Guatemala, Mexico, Peru, Syrian Arab Republic, and the Republic of Korea (USDA PCIT, 2026). It is a quarantine pest for Mexico (EPPO, 2026).

California Distribution: none

California Interceptions: none

The risk that *Remotididymella destructiva* would pose to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** *Remotididymella destructiva* is reported from temperate, subtropical, and tropical regions. Disease is favored by moderate temperatures, high humidity, prolonged surface moisture, and plant injury. These conditions occur seasonally in California tomato-growing areas, particularly in coastal production, transplant greenhouses, irrigated fields, and densely planted crops. Tomato, pepper, potato, and eggplant are widely cultivated in California in commercial fields, greenhouses, and home gardens. Suitable hosts would therefore be readily available in many parts of the state.

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

   Score: **3**

   - Low (1) Not likely to be established 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 confirmed host range is concentrated in Solanaceae, particularly tomato. Pepper, paprika, potato, and eggplant have also been reported as hosts.

   Evaluate the host range of the pest.

   Score: 2

   - 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:** The pathogen produces abundant conidia in pycnidia and can spread locally through splashing water, overhead irrigation, contaminated tools, workers, and infected plant material. It can survive in infected debris and continue developing on fruit after harvest. Long-distance spread may occur through contaminated tomato or pepper seed and infected transplants. Detection of the fungus from tomato seed and its inclusion in seed-health databases support seed as a credible pathway, although the actual rate of seed-to-seedling transmission is uncertain. The combination of local splash dispersal and long-distance movement in seed or plants for planting gives the pathogen a high dispersal potential.

Evaluate the natural and artificial dispersal potential of the pest.

Score: 3
- Low (1) does not have high reproductive or dispersal potential.
- Medium (2) has either high reproductive or dispersal potential.
- High (3) has both high reproductive and dispersal potential.

4) **Economic Impact:** Establishment of an additional seedborne and residue-borne tomato pathogen could increase costs associated with seed testing, sanitation, crop rotation, fungicide use, greenhouse hygiene, removal of infected plants, and postharvest sorting. The fungus can cause foliar blight, stem lesions, flower blight, defoliation, and fruit rot. The pathogen could lower crop yield or quality and increase production and postharvest costs.

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:** Known hosts are primarily cultivated solanaceous crops. No major impacts on native California plant communities or threatened and endangered plant species have been documented. Establishment could affect home and community gardens by causing disease on tomato, pepper, eggplant, or potato.

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

Environmental Impact: 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: 2

- 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 *Remotididymella destructiva:* high

Add up the total score and include it here. **13**
-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 'not established'.

Score: 0
-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.

7) **The final score is** the consequences 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* ***= 13***

Uncertainty:

The greatest uncertainty concerns the distribution of *R. destructiva* in California and elsewhere in the United States. The disease has been recognized for more than a century, and older specimens or reports may be filed under several former names or identified only as *Phoma* species. Modern molecular reassessment of historical collections could expand or alter its known distribution.

The host range also contains uncertainty. Tomato is clearly the principal host, but some reports from potato, pepper and eggplant may be based on morphology rather than sequence-confirmed isolates. It is unclear whether all isolates currently identified as *R. destructiva* have similar host ranges or levels of aggressiveness. The epidemiological importance of contaminated seed is not fully understood. The fungus has been detected on seed, but quantitative information on transmission to seedlings and subsequent field outbreaks is limited.

Finally, published economic-loss data are scarce. The pathogen has often been treated as a secondary fruit rot, but recent reports demonstrate that some isolates can cause aggressive whole-plant blight. Disease severity in California would depend on isolate aggressiveness, cultivar susceptibility, irrigation practices, humidity, plant injury, and the effectiveness of existing fungicide and sanitation programs.

Conclusion and Rating Justification:

Based on the evidence provided above the proposed rating for ***Remotididymella destructiva*** **is B.**

References:

Aveskamp, M.M., de Gruyter, J., Woudenberg, J.H.C., Verkley, G.J.M. and Crous, P.W. 2010. Highlights of the Didymellaceae: a polyphasic approach to characterize *Phoma* and related pleosporalean genera. Studies in Mycology 65: 1–60. https://doi.org/10.3114/sim.2010.65.01

Boerema, G.H., de Gruyter, J., Noordeloos, M.E. and Hamers, M.E.C. 2004. Phoma Identification Manual: Differentiation of Specific and Infra-specific Taxa in Culture. CABI Publishing, Wallingford, United Kingdom.

CABI Crop Compendium. 2026. *Phoma destructiva* (fruit and stem rot) *https://www.cabidigitallibrary.org/doi/10.1079/cabicompendium.40418* Accessed 7/20/26

Chen, Q., Hou, L.W., Duan, W.J., Crous, P.W. and Cai, L. 2017. Didymellaceae revisited. Studies in Mycology 87: 105–159. https://doi.org/10.1016/j.simyco.2017.06.002

Colmán, A.A., Alves, J.L., da Silva, M.A. and Barreto, R.W. 2018. *Phoma destructiva* causing blight of tomato plants: a new fungal threat for tomato plantations in Brazil. Tropical Plant Pathology 43: 257–262. https://doi.org/10.1007/s40858-018-0223-2

European and Mediterranean Plant Protection Organization (EPPO). 2026. *Phoma destructiva* (= *Remotididymella destructiva*) Accessed July, 20 2026.

Hou, L.W., Groenewald, J.Z., Pfenning, L.H., Yarden, O., Crous, P.W. and Cai, L. 2020. The phoma-like dilemma. Studies in Mycology 96: 309–396.

International Seed Federation (ISF). 2025. Regulated Pest List Database. *Remotididymella destructiva* (= *Phoma destructiva*). International Seed Federation, Nyon, Switzerland.

Jones, J.B., Zitter, T.A., Momol, T.M. and Miller, S.A. (eds.). 2014. Compendium of Tomato Diseases and Pests, 2nd ed. APS Press, St. Paul, Minnesota.

Munkvold, G.P. 2009. Seed pathology progress in academia and industry. Annual Review of Phytopathology 47: 285–311. https://doi.org/10.1146/annurev-phyto-080508-081916

USDA Phytosanitary Certificate Issuance and Tracking System, Phytosanitary Export Database (PExD) Harmful Organisms Database Report. Accessed 7/7/2026.

Valenzuela-Lopez, N., Cano-Lira, J.F., Guarro, J., Sutton, D.A., Wiederhold, N.P., Crous, P.W. and Stchigel, A.M. 2018. Coelomycetous Dothideomycetes with emphasis on the families Cucurbitariaceae and Didymellaceae. Studies in Mycology 90: 1–69.

Responsible Party:

Heather J. Martin, Primary Plant Pathologist/Nematologist, CDFA/PHPPS ECOPERS, 1220 N St Rm 221, Sacramento, CA 95814 Phone: (916) 654-1017, permits[@]cdfa.ca.gov.

***Comment Period: 09/08/2026 through 10/23/2026**

***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: B
