

California Pest Rating Profile for
***Colletotrichum gossypii* Southworth, 1809**
anthracnose of cotton

Pest Rating: B

Kingdom: Fungi, Phylum: Ascomycota,
Subphylum: Pezizomycotina, Class: Sordariomycetes, Subclass:
Hypocreomycetidae, Order: Glomerellales,
Family: Glomerellaceae

Comment Period: 08/22/2025 through 10/06/2025

Initiating Event:

This pathogen has not been previously rated. It is an important pathogen for export seed certification programs. The risk to California from *Colletotrichum gossypii* is described herein, and a permanent rating is proposed.

History & Status:

Background:

The genus *Colletotrichum* contains many species, often causing leaf spots and postharvest fruit rots, mainly in tropical and subtropical regions (Cai et al., 2011). Species of *Colletotrichum* are also important because of their use as model organisms for research (Dean et al., 2012). Species-level identification of this genus is complex and challenging. In the past, *Colletotrichum* spp. were often assumed to be species-specific and species of this genus were delimited by (and named after) their host plant. Species cannot reliably be separated using morphological traits, and they can have tremendous variation in pathogenicity depending on the host. Some hosts may be infected by multiple species of *Colletotrichum*, and some species of *Colletotrichum* are known to have dozens of hosts (Cannon et al., 2012). *Colletotrichum* species can behave as endophytes, saprophytes, or necrotrophs. However, they most commonly act as hemi-biotrophs, becoming pathogenic under favorable conditions.

Colletotrichum gossypii belongs to the morphologically and physiologically variable *C. gloeosporioides* species complex and is generally distinguished from other species in the

complex only by gene sequencing (Nawaz et al., 2018). The pathogen was first reported to cause anthracnose of cotton in the U.S. by Southworth (1891). It occurs in most cotton-growing areas throughout the world, although it tends to be problematic only in the higher rainfall areas (Hillocks, 2001). There have been no detections in California.

Cotton is grown primarily in the San Joaquin Valley, in Fresno, Kern, Kings, Merced, and Tulare counties on approximately 115,000 acres ([CDFA Ag Statistics, 2023](#)). There is also production in the Palos Verde and Sacramento valleys. Two types and species of cotton are grown; Upland or Acala types (*Gossypium hirsutum*) make up 25% of production in California, while the extra-long staple or Pima type (*G. barbadense*) makes up 75% (2022 USDA NASS). There are two main products produced from cotton plants: fiber and seed. Fiber is used for fabrics and textiles. Cottonseed yields hulls that are used for animal feed, and oil, which is used for cooking and salad dressing, cosmetics, soap, and as a carrier for agricultural sprays. After oil extraction, there remains cottonseed meal or cake that is used for fertilizers and as feed for cattle, sheep, horses, pigs, fish, and shrimp.

Hosts: The main host is cotton (*Gossypium*) and the two main species which are cultivated for cotton production, *G. hirsutum* and *G. barbadense*, are susceptible. Also *G. anomalum* (African wild cotton), *G. arboreum* (tree cotton), *G. barbadense* (sea island cotton), *G. davidsonii* (Davidson's cotton), *G. hirsutum* (upland cotton), *G. herbaceum* (Levant cotton), *G. thurberi* (desert cotton), and *Solanum lycopersicum* (tomato) (EPPO, 2024).

Symptoms: *Colletotrichum gossypii* infection can affect all parts of the cotton plant at all stages of growth, but seedlings and bolls are the most impacted (Davis, 1981; Hillocks, 2001; EPPO, 2025). On seedlings, spots can be seen on the cotyledons, and a reddish-brown cortical rot forms at the base of the hypocotyl, leading to girdling, yellowing of the leaves, and post-emergence damping-off. In mature plants, lesions can develop on the stems and leaves. Infection during the flowering period occurs near the tips of bolls. These symptoms include small, round, water-soaked spots on the capsule that can grow to cover up to half of the boll surface before developing reddish borders with pink centers. Under dry conditions, leaves develop grey lesions. Favorable conditions for the pathogen lead to acervuli formation with the conidial masses appearing pink and pasty (Davis, 1981; Hillocks, 1992).

Transmission: Cotton seeds are susceptible to infection by *Colletotrichum* spp. (Carbone and Kohn 1999). *Colletotrichum gossypii* is primarily transmitted through seeds. It may also overwinter in the field in infected cotton plant debris, on which fruiting bodies of the sexual stage, known as perithecia, are formed. In the presence of water (rain, irrigation) or humidity, these structures forcibly release ascospores, which are the primary inoculum source for a growing crop. Local spread is with the movement of spores by air or via insects on which *C. gossypii* can be carried as a contaminant (Leakey and Perry, 1966). During the cotton growing period, the conidial spore stage is produced, and repeating cycles of infection occur when conidia are dispersed by wind,

rain, people, and insects (Davis, 1981). Severe infection of bolls by *C. gossypii* causes them to become dark and hard. Once the infection reaches the boll, it spreads through the lint and seed (Davis, 1981). The pathogen can also survive saprophytically on dead or healthy stems without causing symptoms (Hillocks, 2001).

Damage Potential: The use of healthy seeds and seedlings (treated or certified) has helped reduce the spread of cotton anthracnose (Davis, 1981; Hillocks, 2001). The disease proved economically significant in China during the early 1990s, during conditions of high rainfall (Zhang and Zhang, 1993).

Worldwide Distribution: Africa: *Benin, Central African Republic, the Democratic Republic of the Congo, Cote d'Ivoire, Ethiopia, Ghana, Kenya, Madagascar, Malawi, Mali, Mozambique, Nigeria, Senegal, Somalia, South Africa, Sudan, Tanzania, Tunisia, Uganda, Zimbabwe.* Americas: *Argentina, Barbados, Bermuda, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Puerto Rico, Trinidad and Tobago, Uruguay, Venezuela, United States (Alabama, Arkansas, Florida, Georgia, Hawaii, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas).* Asia: *Afghanistan, Bangladesh, Cambodia, China, India, Indonesia, Japan, Democratic People's Republic of Korea, Republic of Korea, Myanmar, Pakistan, Philippines, Sri Lanka, Taiwan, Thailand.* Europe: *Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Italy, Netherlands, Romania, Russia, Spain.* Oceania: *Australia, Guam* (EPPO, 2025).

Official Control: *Colletotrichum gossypii* is on the EPPO's A1 list in Egypt, Bahrain, Kazakhstan, Uzbekistan, Azerbaijan, Türkiye, the Asia and Pacific Plant Protection Commission, and the Eurasian Economic Union. It is also on the USDA PCIT's harmful organisms list for Egypt, Israel, the United Kingdom, the Syrian Arab Republic, and the European Union (USDA PCIT, 2025).

California Distribution: none

California Interceptions: none

The risk that *Colletotrichum gossypii* would pose to California is evaluated below.

Consequences of Introduction:

- 1) **Climate/Host Interaction:** This pathogen requires high rainfall and humidity to reproduce and spread. Areas of California where cotton is grown have hot, dry summers that are unlikely to be conducive to epidemics of *C. gossypii*.

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

Score: 1

- **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 is limited to cotton. In their report on the infection of tomato, Nawaz et al. (2018) suggested that the inoculum was from cotton plants located nearby.

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:** *Colletotrichum gossypii* is primarily transmitted through seed and 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:** Infection with anthracnose negatively affects plant growth and yield. This is a quarantine pest for some countries.

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: none

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

Environmental Impact:

- 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: 1

- 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 *Colletotrichum gossypii*: Medium

Add up the total score and include it here. **9**

-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 = 9*

Uncertainty: None

Conclusion and Rating Justification:

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

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Responsible Party:

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***Comment Period: 08/22/2025 through 10/06/2025**

***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](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.

Pest Rating: B