

# Anthracnose: Causes, Symptoms, Diagnosis and Management Strategies in Agricultural and Horticultural Environments

Luis Diego\*

Department of Chemical Biology, Institute of Biology, Sanchez University of Life Sciences, Cartagena, Colombia

## DESCRIPTION

Anthracnose is a widespread fungal disease that affects a variety of plants causing significant damage to agricultural crops, ornamental plants and trees worldwide. Characterized by dark, sunken lesions on leaves, stems, fruits and sometimes even seeds anthracnose can lead to reduced crop yields, defoliation and in severe cases plant death. This article looks into the causes, symptoms, diagnosis and management strategies for anthracnose to provide a comprehensive understanding of this plant disease. Anthracnose is a pervasive fungal disease with diverse impacts on plants worldwide. Understanding its causes, symptoms and management strategies is important for effective disease prevention and control in agricultural and horticultural settings. By implementing integrated pest management practices and promoting sustainable agriculture, stakeholders can work towards minimizing the economic and environmental impact of anthracnose on global food systems.

### Causes of anthracnose

Anthracnose is primarily caused by fungi belonging to the genera *Colletotrichum*, *Glomerella*, *Elsinoë*, *Gloeosporium* and others depending on the host plant species. These fungi survive in infected plant debris, soil and on seeds facilitating their spread through splashing water, wind and insects. Warm, humid conditions are conducive to fungal growth and spore dissemination making anthracnose prevalent in tropical and subtropical regions during periods of high rainfall.

### Symptoms of anthracnose

The symptoms of anthracnose vary depending on the host plant species but generally include the following:

**Leaf lesions:** Dark, water-soaked spots or lesions on leaves that may expand over time. These lesions often have a distinct margin and can coalesce leading to large necrotic areas.

**Stem and twig cankers:** Sunken lesions on stems and twigs which can girdle the plant and cause return of affected branches.

**Fruit rot:** Fruits infected with anthracnose develop dark, sunken lesions that render them inedible. This is a significant concern for agricultural crops such as mangoes, peppers, tomatoes and citrus fruits.

**Seedborne infection:** Anthracnose can also infect seeds leading to reduced seed quality and germination rates.

**Defoliation:** Severe infections can cause premature defoliation weakening the plant and reducing its ability to photosynthesize effectively.

### Host plants affected by anthracnose

Anthracnose affects a wide range of plants including:

- **Trees:** Such as sycamore, oak, maple and ash.
- **Vegetables:** Including tomatoes, peppers, cucurbits (cucumbers, squash) and beans.
- **Fruits:** Such as mangoes, strawberries, citrus fruits and bananas.
- **Grains:** Including corn, sorghum and oats.
- **Ornamental plants:** Such as roses, dogwoods and azaleas.

### Diagnosis of anthracnose

Diagnosing anthracnose involves careful observation of symptoms and in some cases laboratory analysis to confirm the presence of fungal pathogens. Key diagnostic steps include:

**Visual inspection:** Examining affected plant parts for characteristic lesions and patterns of disease spread.

**Symptom comparison:** Comparing observed symptoms with known anthracnose symptoms on specific plant species.

**Laboratory tests:** Conducting fungal isolation and identification through culturing techniques and microscopic examination of spores.

**Correspondence to:** Luis Diego, Department of Chemical Biology, Institute of Biology, Sanchez University of Life Sciences, Cartagena, Colombia, E-mail: diego11@chembiosachez.co

**Received:** 31-May-2024, Manuscript No. FGB-24-32085; **Editor assigned:** 03-Jun-2024, PreQC No. FGB-24-32085 (PQ); **Reviewed:** 17-Jun-2024, QC No. FGB-24-32085; **Revised:** 24-Jun-2024, Manuscript No. FGB-24-32085 (R); **Published:** 01-Jul-2024, DOI: 10.35248/2165-8056.24.14.251

**Citation:** Diego L (2024) Anthracnose: Causes, Symptoms, Diagnosis and Management Strategies in Agricultural and Horticultural Environments. Fung Genom Biol. 14:251.

**Copyright:** © 2024 Diego L. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## Management and control strategies

Effective management of anthracnose relies on Integrated Pest Management (IPM) strategies that combine cultural, biological and chemical control methods:

### Cultural practices:

- **Sanitation:** Removing and destroying infected plant debris to reduce overwintering sources of the fungus.
- **Crop rotation:** Rotating crops to prevent the buildup of fungal pathogens in the soil.
- **Pruning:** Pruning infected plant parts to improve air circulation and reduce disease spread.
- **Mulching:** Applying mulch to prevent soil splash and reduce the likelihood of fungal spore transmission.

### Biological control:

- **Bio fungicides:** Applying microbial agents that antagonize fungal pathogens such as *Trichoderma* species to suppress anthracnose.

### Chemical control:

- **Fungicides:** Using fungicides as a last resort applying them preventatively or curatively according to label instructions. Fungicides containing active ingredients like azoxystrobin,

mancozeb and chlorothalonil are commonly used for anthracnose control.

**Resistant varieties:** Planting resistant cultivars when available can significantly reduce the impact of anthracnose on crops and ornamental plants.

## Economic and agricultural impact

Anthracnose poses a considerable economic threat to agriculture particularly in regions with favorable environmental conditions for fungal growth. Crop losses due to reduced yield, poor fruit quality and increased production costs associated with disease management can impact farmer's livelihoods and food security.

## Future directions in study and management

Ongoing study focuses on developing resistant cultivars, improving disease forecasting models and identifying novel biocontrol agents to enhance integrated management strategies for anthracnose. Collaborative efforts between researchers, extension services and agricultural stakeholders are essential to mitigate the impact of anthracnose and other fungal diseases on global crop production.