



AGRI MAGAZINE

(International E-Magazine for Agricultural Articles)

Volume: 03, Issue: 05 (May, 2026)

Available online at <http://www.agrimagazine.in>

© Agri Magazine, ISSN: 3048-8656

Anthracnose of Mango: Disease Cycle and Control

Megha Sharma¹ and *M.R. Asheesh Gupta²

¹Assistant Professor, Faculty of Agriculture, Jagannath University, Jaipur, India

²Student, B.Sc. (Hons.) Agriculture, Jagannath University, Jaipur, India

*Corresponding Author's email: aseeshgupthamahankali@gmail.com

Anthracnose of mango, caused by *Colletotrichum gloeosporioides*, is a major fungal disease that affects leaves, flowers, and fruits, leading to significant yield and quality losses. The disease is more severe under warm and humid conditions and is known for its latent infection in fruits, which becomes visible during ripening. The pathogen spreads through spores via rain and wind and survives in infected plant debris. Effective management involves an integrated approach including cultural practices, chemical fungicides, biological control, and proper post-harvest handling. Timely control measures are essential to reduce losses and ensure healthy mango production.

Keywords: Anthracnose, Mango Disease, *Colletotrichum gloeosporioides*, Disease Cycle, Fungal Pathogen, Control Measures, Post-Harvest Loss, Integrated Disease Management

Introduction

Anthracnose of mango is one of the most destructive fungal diseases affecting mango production worldwide, especially in tropical and subtropical regions. It is caused by the fungus *Colletotrichum gloeosporioides*, which infects leaves, flowers, twigs, and fruits at different stages of growth. The disease is particularly severe under warm and humid environmental conditions, leading to heavy yield losses and deterioration of fruit quality. Anthracnose not only reduces the quantity of production but also affects the marketability of fruits due to blemishes and post-harvest decay. Effective understanding of its disease cycle and control measures is essential for sustainable mango cultivation.

Causal Organism

Anthracnose disease in mango is caused by the fungal pathogen *Colletotrichum gloeosporioides*. This fungus is known for its wide host range and ability to survive in plant debris and infected plant parts. It produces spores called conidia, which are responsible for spreading the disease. The pathogen can remain dormant in infected tissues and become active when favorable environmental conditions arise. Its ability to cause both field and post-harvest infections makes it particularly dangerous.

Symptoms of Anthracnose

The symptoms of anthracnose vary depending on the plant part affected. On leaves, small dark brown to black spots appear, which may enlarge and coalesce, leading to blighting. In severe cases, defoliation may occur. On twigs, lesions may cause dieback, affecting overall plant vigor. The disease is especially damaging during the flowering stage, where it causes blossom blight, leading to drying and dropping of flowers, thus reducing fruit set. On fruits, small black spots appear, which enlarge into sunken lesions. During storage and ripening, these lesions expand rapidly, leading to fruit rot. Infected fruits lose their market value due to poor appearance and quality.

Disease Cycle

The disease cycle of anthracnose is continuous and involves both primary and secondary infection stages. The fungus survives in infected plant debris, dried twigs, and mummified fruits left in the orchard. During favorable conditions, it produces conidia, which are spread by rain splash, wind, and insects. These spores land on susceptible plant parts such as young leaves, flowers, and fruits. Upon landing, they germinate in the presence of moisture and penetrate the plant tissues either directly or through natural openings. One of the unique features of anthracnose is its latent infection. The fungus can infect immature fruits and remain dormant until the fruit begins to ripen. During ripening, the pathogen becomes active, causing visible symptoms such as fruit rot. This is why fruits that appear healthy at harvest may develop rot during storage and transportation. Secondary spread occurs when new spores are produced from infected tissues and spread to other parts of the plant or nearby plants, continuing the cycle.

Favorable Conditions

Anthraco development is highly influenced by environmental conditions. Warm temperatures ranging from 24-30 C and high relative humidity above 90% are ideal for disease development. Prolonged leaf wetness due to rain, dew, or irrigation provides the necessary moisture for spore germination and infection. Frequent rainfall and cloudy weather during flowering and fruiting stages significantly increase disease incidence. Dense canopy and poor air circulation within the orchard create a humid microclimate that favors pathogen growth. Overcrowding of trees and lack of proper pruning further enhance disease spread.

Impact on Crop

Anthraco has a severe impact on mango production, affecting both yield and quality. During the flowering stage, blossom infection can lead to heavy flower drop, drastically reducing fruit set. Infected fruits often fall prematurely or develop rot during storage, leading to significant Rost-harvest losses. Yield losses can range from 20% to 60% under severe conditions. The disease also reduces the shelf life of fruits, making them unsuitable for long-distance transportation and export. As a result, farmers face economic losses due to reduced market value and increased management costs.

Cultural Control Methods

Cultural practices play a crucial role in managing anthracnose. Regular pruning of trees helps improve air circulation and reduce humidity within the canopy. Removal and destruction of infected plant debris, such as fallen leaves and mummified fruits, help in reducing the source of infection. Maintaining proper spacing between trees prevents overcrowding and allows better sunlight penetration. Avoiding overhead irrigation during flowering and fruiting stages reduces leaf wetness and limits disease development. Proper orchard sanitation is one of the most effective preventive measures.

Chemical Control Methods

Chemical control is widely used for managing anthracnose, especially in commercial orchards. Fungicides such as Copper oxychloride, Carbendazim, Mancozeb, and Propiconazole are commonly recommended. Spraying should begin at the flowering stage and continue at regular intervals during fruit development. Pre-harvest sprays help reduce field infection, while post-harvest treatments such as fungicide dips can control latent infections. Proper timing and dosage of fungicide application are essential for effective disease control. However, excessive use should be avoided to prevent environmental hazards and resistance development.

Biological Control Methods

Biological control is gaining importance as an eco-friendly alternative to chemical methods. Beneficial microorganisms such as *Trichoderma* and *Pseudomonas fluorescens* can suppress the growth of *Colletotrichum gloeosporioides*. These bio-agents compete with the pathogen

for nutrients and space, and also produce substances that inhibit fungal growth. Application of these organisms in the soil or as foliar sprays can reduce disease incidence and improve plant health. Although biological methods may not completely eliminate the disease, they are effective when used as part of an integrated approach.

Post-Harvest Management

Post-harvest management is critical in controlling anthracnose, as the disease often becomes visible during fruit ripening. Harvesting fruits at the proper maturity stage and handling them carefully can reduce injury and infection. Hot water treatment, where fruits are dipped in warm water at around 50-55°C for a few minutes, helps kill surface pathogens. Fungicide dips can also be used to reduce post-harvest decay. Proper storage conditions, such as low temperature and controlled humidity, help in slowing down disease development and extending shelf life.

Integrated Disease Management (IDM)

An integrated approach combining cultural, chemical, and biological methods is the most effective way to manage anthracnose. This includes maintaining orchard hygiene, using resistant varieties if available, applying fungicides at critical stages, and adopting biological control methods. Regular monitoring of the orchard helps in early detection and timely intervention. Training farmers in proper disease management practices is essential for reducing losses and improving productivity. Integrated disease management not only controls the disease effectively but also promotes sustainable agriculture.

Integrated Disease Management (IDM)

An integrated approach combining cultural, chemical, and biological methods is the most effective way to manage anthracnose. This includes maintaining orchard hygiene, using resistant varieties if available, applying fungicides at critical stages, and adopting biological control methods. Regular monitoring of the orchard helps in early detection and timely intervention. Training farmers in proper disease management practices is essential for reducing losses and improving productivity. Integrated disease management not only controls the disease effectively but also promotes sustainable agriculture.

Conclusion

Anthrachnose of mango is a highly destructive disease that affects all stages of crop growth and significantly reduces yield and fruit quality. Its ability to cause latent infections makes it particularly challenging to manage. Understanding the disease cycle is essential for implementing timely and effective control measures. By adopting a combination of cultural practices, chemical treatments, biological methods, and proper post-harvest management, the impact of anthracnose can be minimized. Sustainable management practices are key to ensuring healthy mango production, better market value, and improved farmer income.