



## **Report of Fungal Diseases of Mango from Marathwada Region Of Maharashtra**

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### **ABSTRACT**

*Mango (Mangifera indica L.) is one of the most popular fruit in the world. Mango is grown in all the states of India. The mango fruit contains amino acids, carbohydrates, fatty acids, minerals, organic acids, proteins and vitamins. Immature fruit is acidic, astringent and rich in ascorbic acid (Vitamin C); however, ripened fruit is fairly rich in pro-vitamin A, Vitamin B1 and B2. Many fungal diseases of Mango have been reported by research workers. Hence, the survey has been carried out for the incidence of most affecting fungal diseases of Mango recorded on large scale in the area under investigation. Diseased Mango samples were collected from various districts of Marathwada region (Aurangabad, Beed, Osmanabad, Latur, Nanded, Hingoli, Parbhani and Jalna) and brought to the laboratory for further investigation. However, Mango Anthracnose and Powdery mildew disease were recorded as severe amongst the fungal disease in the area. Mango anthracnose was recognized as different diseases due to variable symptoms of the disease. Powdery mildew found to cause near about 30 to 60 % loss of the mango fruits in the study area. The detailed observations are recorded regarding causal organisms, disease symptoms and control measures.*

**Key Words:** Mango, Fungal Disease, Marathwada region

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### **INTRODUCTION**

Mango (*Mangifera indica* L.) fruit, which ranks fifth in production worldwide, is cultivated throughout the tropics as well as subtropical areas such as Spain, Florida, North Africa, Israel and Japan. The countries that are the largest producers of mango are India, China, Mexico, Thailand, Pakistan and Philippines. Mango is extensively grown in India, thriving well under wide range of tropical and subtropical conditions. In India, mango occupies nearly 1.3 million hectares area and the total production of fruits is approximately 21 million tons [11]. Mango has been cultivated for thousands of years in India and its cultivation is as old as Indian civilization [6].

India is one of the largest producers of mango in the world. Mango is generally considered as “King of fruits” as it has wide adaptability, high nutritive value, richness in variety, delicious taste, excellent flavor, attractive appearance and popularity among the masses. The fruit contains amino acids, carbohydrates, fatty acids, minerals, organic acids, proteins and vitamins. Immature fruit is acidic, astringent and rich in ascorbic acid (Vitamin C); however, ripened fruit is fairly rich in pro-vitamin A, Vitamin B1 and B2.

Many fungal diseases of Mango have been reported by research workers. Well known fungal diseases of Mango are: Anthracnose (*Colletotrichum gloeosporioides*), Blossom blight (*Botrytis cinerea*), Crown rot (*Fusarium solani*), Crusty leaf spot (*Zimmermanniella trispora*), Dieback (*Botryosphaeria disrupta*), Gall (*Fusarium decemcellare*), Leaf blight (*Bipolaris hawaiiensis*), Leaf spot (*Curvularia lunata*), Fruit rot (*Alternaria alternata*), Macrophoma rot (*Macrophoma mangiferae*), Phoma blight (*Phoma glomerata*), Pink disease (*Erythriscium salmonicolor*), Powdery mildew (*Oidium mangiferae*), Root rot (*Pythium splendens*), Scab (*Elsinoe mangiferae*), Sooty molds (*Capnodium citri*), Stem canker (*Phoma* sp.) etc.

Bacterial, Nematode and other pathogenic diseases also play an important role in the destruction of Mango orchards. Along with these some of the noninfectious disorders and some deficiency disorders were also observed in Mango viz. Abnormal ripening, Black tip, Bunchy top, Chilling injury, Copper deficiency, Decline, Internal necrosis, Little leaf, Manganese deficiency, Sapburn injury, Spongy tissue etc.

Hence, the survey has been carried out for the incidence of fungal diseases of Mango recorded on large scale in Marathwada region of Maharashtra (India).

## MATERIALS AND METHODS

Diseased Mango samples were collected from various districts of Marathwada region (Aurangabad, Beed, Osmanabad, Latur, Nanded, Hingoli, Parbhani and Jalna) and brought to the laboratory for further investigation. The infected samples like leaves, twigs, fruits, roots etc. were washed with running tap water and isolation of fungal pathogen was done as per the method adopted by Pawar [9].

**Isolation & Identification of the fungal pathogen:** The infected samples exhibiting clear symptoms were thoroughly washed in sterile water. The infected tissues along with adjacent small unaffected tissue were cut into small pieces (2–5 mm squares) and by using flame-sterilized forceps, they were transferred to sterile petridishes containing 0.1% mercuric chloride solution used for surface sterilization of plant tissues for a period of 30–60 seconds. Alternatively, Clorox (10%), sodium hypochlorite (1%) or hydrogen peroxide (50%) may be used for surface sterilization of plant tissues. The sterilized pieces were aseptically transferred to petridishes containing standard medium like potato dextrose agar (PDA) and incubated at room temperatures (25–27°C) for further growth and development of the fungus. Antibiotics was incorporated in the media to prevent bacterial contamination. A portion of mycelium developing on the PDA medium was transferred to the agar slants for purification and storage for further investigation. Identification of the fungal pathogen was done on the basis of morphology and etiology of the fungus. The pathogenicity of the fungal pathogen was confirmed by adopting Koch's postulates.

## RESULTS AND DISCUSSION

Mango plants were found affected with number of fungal and bacterial diseases. However, Mango anthracnose and Powdery mildew disease were recorded as severe amongst the fungal disease in the area under investigation. Mango anthracnose was recognized as different diseases due to variable symptoms of the disease. Powdery mildew found to cause near about 30 to 60 % loss of the mango fruits in the study area. The detailed observations regarding causal organisms, disease symptoms and control measures are presented here.

### Mango Anthracnose

**Name of the Disease:** Mango Anthracnose

**Causal Organism:** *Colletotrichum gleosporioides* Penz and Sacc.

**Disease Symptoms:** Commonly the disease symptoms were recorded on flower, fruit and leaves. The symptoms on leaves and panicles were small, angular, brown to black spots in the initial stage later these spots enlarge and coalesce. This may result in death of the flowers and great reduction in yield. Severity of the disease from slight to a heavy infection of the panicles was according to the weather conditions. In case of severely infected plants, very few fruit setting was recorded due to destruction of inflorescence. Young diseased fruits show black spots, shrivel and drop off. Mature diseased mango fruit carry the causal fungus in to storage and considerable loss was recorded due to post-harvest diseases during storage, transit and marketing.

**Control Measure:** The causal fungus is saprophytic hence to control the disease, the infected twigs should be pruned and burnt along with fallen leaves for reducing the inoculum potential. To control the foliar infections, spray copper fungicides (0.3%). During flowering controls and blossom infection spraying twice with Carbendazirn (Bavistin 0.1%) at 15 days interval is always helpful. To control postharvest diseases of mango caused by anthracnose could be controlled by dipping infected fruits in Carbendazim (0.1%) in hot water at 52 C for 15 minutes.

### Powdery Mildew of Mango

**Name of the Disease:** Powdery Mildew

**Causal Organism:** *Oidium mangiferae* BERT.

**Disease Symptoms:** Symptoms of the disease were recorded on leaves, stalks of panicles, flower and young fruits. Most of the varieties of mango were to be susceptible to the disease. The characteristic symptom of the disease is the white superficial powdery fungal growth on plant parts. Infected young leaves are highly susceptible to the disease they easily curl up and become distorted while older are most resistant which show grayish, irregular spots and necrotic lesions. The infected flowers fail to open and drop pre-maturely which ultimately results in limited or no fruit setting. Affected flowers and young fruits eventually turn brown and dry. Infected fruit shows purple-brown blotchy lesions that crack and form corky tissue as the fruitlet enlarges. Mostly the disease was recorded during the month of December to March.

**Control Measure:** The disease could be controlled by using resistant varieties and spraying some fungicides after 50% of full flowering, and spraying should continue every 7–14 days thereafter until fruit

set. Collection and destruction of infected plant parts and panicles is very useful to reduce the disease incidence.

Arauz [3] explained economic impact and current options for integrated management of Mango anthracnose. Ploetz [10] described Mango Anthracnose as the most important disease in much of the mango producing world. Diedhiou *et al.*, [4] studied efficacy of different fungicides against Mango Anthracnose in Senegalese Soudanian agroclimate.

Powdery mildew of mango has been reported by various worker [7, 8, 12]. A detailed review on powdery mildew of Mango has been reported from South Africa [5], Pakistan [1]. Akhtar *et al.*, [2] suggested preventive control measures for the disease.

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