

بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية

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STUDIES ON BLIGHT DISEASE AFFECTING MANGO INFLORESCENCES AND FRUITS IN EGYPT.

BY

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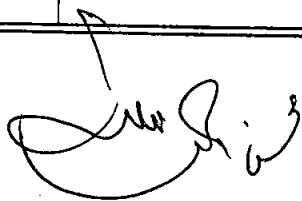
قَالُوا سُبْحَانَكَ لَا عِلْمَ
لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ
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ABSTRACT

Isolation procedures from inflorescences and fruits of mango produced certain fungi. The most frequently isolated and virulent fungi were *F.sacchari*, *F.oxysporum*, *A.alternata* and *B.rhodina*. There is a positive correlation between values of the maximal RH and AT in orchards and the percentage of infection. Pathogenicity tests *in vitro* and *in vivo* showed that *F.sacchari*, *F.oxysporum*, *A.alternata* and *B.rhodina* were more pathogenic to mango. Ability of fungal culture filtrates to produce disease symptoms was studied. Reaction of mango cultivar showed that Taymour is highly susceptible while Zebda is least susceptible. Optimum temperature for linear growth was 25&30°C and the optimum RH for linear growth was between 80&95%. The activity of PME, PG and CX increase with culture filtrate age. Application with Baker's yeast, Goemar, Aluminum ferric sulphat, Topsin M70 showed that Topsin M-70 and Goemar were the best applications for disease control. Spray with foliar spray (potassium sulphate Noshader sulphate+ copper sulphat and Goemar) decrease sharply infection. Biochemical changes in sugars, Amino acid, phenoles content and oxidative reductive enzyme activities were also studied in both healthy and artificialilly infected inflorescences and fruits of the two tested mango cultivars by the four isolasted fungi.



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INTRODUCTION

Mango (*Mangifera indica* L.) wide popularity among millions of people all over the world, and has the largest area under any single fruit crop in the tropics. It occupies relatively the same position in the tropics as does apple in North America or in Europe. In fact, it will be no exaggeration to say that because of its excellent flavour, attractive fragrance, beautiful shades of colour, delicious taste and healthful value. Mango is now recognized as one of the best fruits in the world market and it is actually considered as the king of all fruits. Its bark is a good source of important organic compounds such as tannin and gums, as well as being, rich in vitamins A and C.

Mango is subjected to a number of diseases at all stages of its development, starting with plants in the nursery to the fruit in storage or transit. Almost every part (trunk, branch, twig, leaf, petiole, flower and fruit) is attacked by a lot of parasites. These manifest themselves as several types of symptoms (rot, dieback, anthracnose, scab, necrosis, blotch and spots). Some of these diseases take heavy toll of plants and produce a like, and have become a limiting factor in mango orchards in some regions.

Mango is one of the most important fruit crops in Egypt. According to Ministry of Agriculture Statistics, Mango area over 45. 404 fedans, producing about 198.070 tons of fruits per year. They are distributed in different locations, mainly in Fayoum, Giza, Ismailia, Sharkia, Beheera, Kalubia, Kena, Aswan and Assiut Governorates. It occupies the third position among the Egyptian fruit crops after citrus and grape.

Under local conditions, numerous pathogens attack mango flowers and fruits in the field as well as during harvesting and storage causing considerable losses. Mango inflorescences had been reported to be severely attacked by blossom blight and also fruit blight that spread widely in the field causing great losses. (Palm 1932; West 1934; Bitancourt 1938; Mc Cormack 1939; Sattar and Malik 1939; Rath and Mohanan 1976; Baraka 1983; Fitzell et al., 1984 and Prior and Ryder 1987; Sarrano and Palo 1993).

Blossom and fruit blights are caused by various pathogenic fungi. Recently, this disease has been observed in Egypt in different localities. This investigation was undertaken to study the disease with respect to its causal pathogens, the susceptibility of certain mango cultivars, mode of fungal penetration, and the biochemical changes associated with this disease.

Disease epidemiology in relation to the prevailing environmental conditions is considered. Also, disease management including the use of fungicides, biocatalyst and some nutrient.

Review of Literature

Causal microorganism

Fungi associated with blossom blight

Many investigators pointed out that blossom blight disease affecting mango trees was incited by several pathogenic fungi belonging to different genera.

Mukherji and Bhattacharya (1965) stated that *Alternaria tenuissima* infected mango trees and caused small, brownish, circular spots on leaf and fruit surface, with patches on twigs. The spots enlarge, become irregular and black, and form large patches. On fruits, the spots became water – soaked, and in advanced stages the whole fruits became rotten. When the skin was removed from diseased fruits, reddish patches could be seen on the flesh below the spotted areas.

Singh and Tandon (1967) reported that isolates of *Alternaria tenuis* (Fr. Fr) Kiessler (*A. alternata*) from banana, guava, and mango were pathogenic to leaves of the same hosts.

Abd-Elmegid et al. (1971), reported that mango cultivars varied in their natural susceptibility to fruit dropping from 5.6 % to 63 %. Some cultivars were highly affected e.g. Bullock's Heart, Aromance, Taymour, and Mabroka. Misk and Pairi were moderately affected, Hindy-bezera and Nasr were slightly susceptible.

Verma et al (1974) isolated *F. moniliform* from more than 300 separate samples of malformed mango inflorescence and vegetative shoots collected from different parts of India. The malformations were reproduced by artificial inoculation with isolates of *F. moniliform* from malformed vegetative shoots and inflorescences. They also observed the mycelium of *F. moniliform*, inter and intra cellularly, in the cortex and phloem of diseased mango plants.

Rath and Mohanan (1976) found that fungi associated with mango blossom blights were *Colletotrichum*, *gloeosporoids*, *Botryodiplodia theobromae*, *Fusarium poae*, *Aspergillus spp*, *Cladosporium sp*, *Pestalotia mangiferae* spg, *Curvularia maculans* and *Sclerotium rolfsii* sacc.

Bhatnagar and Beniwal (1977) reported that free hand sections from malformed vegetative buds showed the presence of interacellular mycelial threads of *F. oxysporum* in thickness, and sometimes formed globose structure inside the cells.

Fitzell (1979) mentioned that anthracnose disease caused by *Colletotrichum gloeosporoids* attacked almost every part of the mango tree, and sources of inoculum such as infected leaves, branch terminal and mummified flowers were present all year round. He added that moist conditions prevail during flowering enhanced the disease causing blossom blight.

Gafar et al (1979) stated that fruits affected with the dropping phenomenon possess abnormal growth and shape compared with the normal ones, *Fusarium oxysporum* was found to be the most associated