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Postharvest Diseases of Mango Fruits and Their Losses

Somsiri Sangchote[1]

ABSTRACT

Postharvest diseases of mango from different producing areas showed the following diseases including anthracnose *(Colletotrichum gloeosporioides)*, Botryodiplodia fruit rot *(Botryodiplodia theobromae)*, Dothiorella fruit rot *(Dothiorella dominicana, D. mangiferae)*, Phomopsis fruit rot *(Phomopsis mangiferae)* and Aspergillus rot *(Aspergillus niger)*. Anthracnose was the most severe disease and caused losses to mango fruits var. Nam Dok Mai from Nakornratchasima and Nan at 96% and 49% respectively. The next to anthracnose disease were Botryodiplodia and Dothiorella fruit rot.

INTRODUCTION

Many varieties of mango fruits have been grown in Thailand including Nam Dok Mai, Nang Klang Wan, Tong Dum, Okrong etc. Some of them export to nearby countries such as Singapore, Hong Kong, Malaysia. Due to warm weather and high humidity, fruits rot occured easily and caused severe losses to mango fruits during transportation and storage. It has been reported that *Botryodiplodia theobromae, Dothiorella dominicana, D. mangiferae, Phomopsis mangiferae, Colletotrichum gloeosporioides* and *Aspergillus niger* were the causal organisms. (Gangolly *et al.*, 1957; Kurup *et al.*, 1967; Pathak and Srivastava, 1968 and Vock, 1978). In this study, attempts were made to determine the causal organisms of the postharvest diseases of mango fruits and their losses.

MATERIALS AND METHODS

One hundred mature green mango fruits var. Nam Dok Mai, Tong Dum, Okrong, and Kaew were obtained from different producing areas including Chachoengsao, Nan, Nakornratchasima and Nonburi Province. They were washed with tap water and dried, then ripened in the ripening room. The percentages of losses were recorded after theirs ripened. Diseased fruits were photographed and examined microscopically. The fungi were isolated from the fruits by tissue transplanting method. Fungal isotated were maintained as pure cultures for morphological studies and pathogenicity test.

RESULTS AND DISCUSSION

Percentages of losses of mango fruits due to postharvest diseases were recorded at different percentages. Mango fruits from Nakornratchasima (Pakchong) showed the highest percentages of anthracnose disease at 96% (Table 1). This area was rather old mango producing area so the accumulation of inoculum was rather high and *C. gloeosporioides*, causal organism of anthracnose, could infect the fruits at any stages of fruit developments (Quimio and Quimio, 1974). Botryodiplodia fruit rot and Dothiorella fruit rot were the next to anthracnose disease. Many kinds of fungi were obtained from diseased mango fruits including *Botryodiplodia theo-*

1 Department of Plant Pathology, Kasetsart Univ.

Table 1 Percentages of losses due to postharvest diseases of mango fruits var. Nam Dok Mai, Okrong, Tongdum and Kaew from different producing areas

Location	Variety	Losses due to diseases				
		Anthracnose	Botryodiplodia fruit rot	Dothiorella fruit rot	Phomopsis fruit rot	Aspergillus rot
Nonburi	Okrong	0	20	34	7	21
	Kaew	48	0	0	0	0
	Nam Dok Mai	12	23	25	10	23
	Tongdum	30	41	25	0	21
Chachoengsao	Okrong	8	37	27	4	1
	Nam Dok Mai	30	34	26	2	11
	Tongdum	10	16	23	0	3
Nan	Nam Dok Mai	49	14	1	0	2
Nakornratchasima	Kaew	54	0	0	0	0
	Nam Dok Mai	96	4	1	0	0

bromae, Colletotrichum gloeosporioides, Dothiorella dominicana, D. mangiferae, Phomopsis mangiferae and *Aspergillus niger.* Details of each diseases were reported as follows.

Anthracnose

Anthracnose first, appeared as small, black circular spots on the fruit skin, these increased in sizes and later became sunken and collapsed forming larger spot. The acervuli produced bright, moist, salmon colored conidial mass on the spot. Severe infected fruits may be entirely covered with dark blemishes.

Acervuli of *Colletotrichum gloeosporioides* were salmon pink, waxy appearence. Conidia were hyaline, cylindrical or oval and straight measure of 2.6 – 5.2 × 5.2 – 18.2 μ (Figure 1.)

Botryodiplodia fruit rot

Infection started at stem end and spreaded uniformly along the fruit, causing a progressive brownish, black discoloration then softening of pulp. The flesh become pulpy and finally semiliquid. The skin became soft, black, wrinkled and encrusted with pycnidia.

The short straight neck and ostiole pycnidia of *B. theobromae* immersed in the skin of infected fruits measure 124.8 – 249.6 × 176.8 – 395.2 μ . Conidia were borne on short conidiophore. The conidia were usually extruded as single cell but after subsequently mature would become characteristically brown and two cells measured 14.3 – 15.6 × 18.2 – 28.6 μ (Figure 2).

Dothiorella fruit rot

Infected fruits become a stem end rot producing blackish and discolored region. The fungus infected and grew uniformly along the fruits. Later it turned black as a result of fungal invasion and become mumified. Numerous black pycnidia bursted through the epidermis and appeared on the rotted surface.

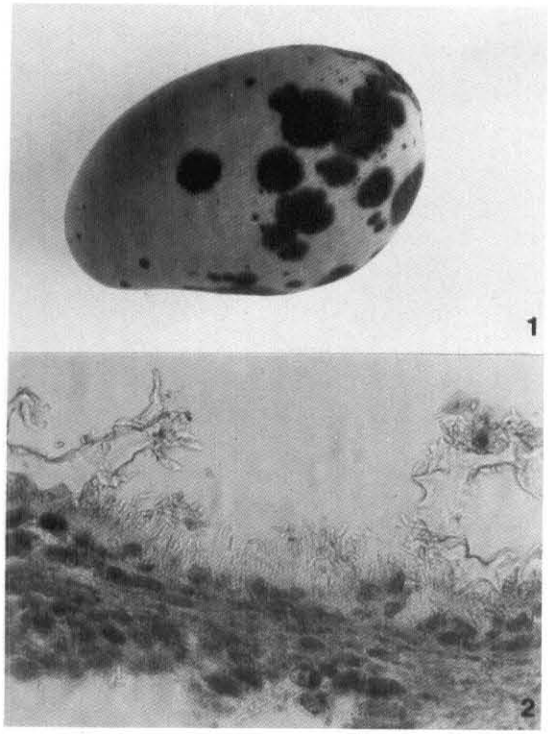

Figure 1.

1. Symptom of anthracnose disease on mango fruit
2. The fungus, *Colletotrichum gloeosporioides*

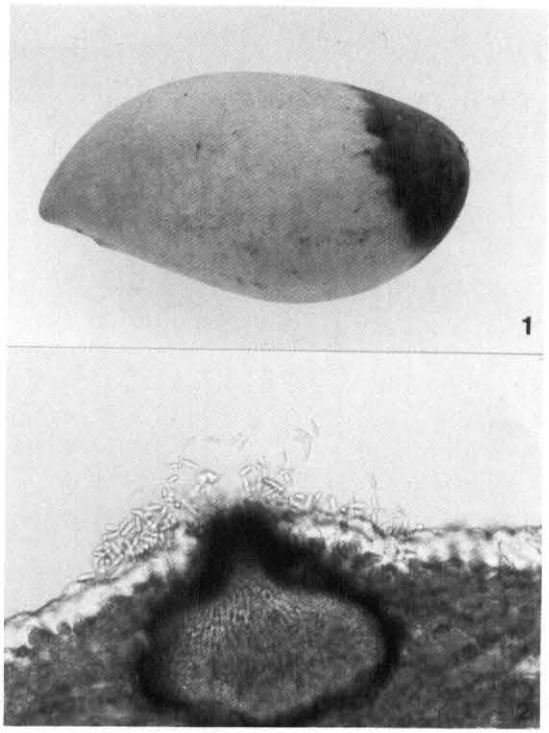

Figure 3.

1. Symptom of Dothiorella fruit rot on mango fruit
2. The fungus, *Dothirella dominicana*

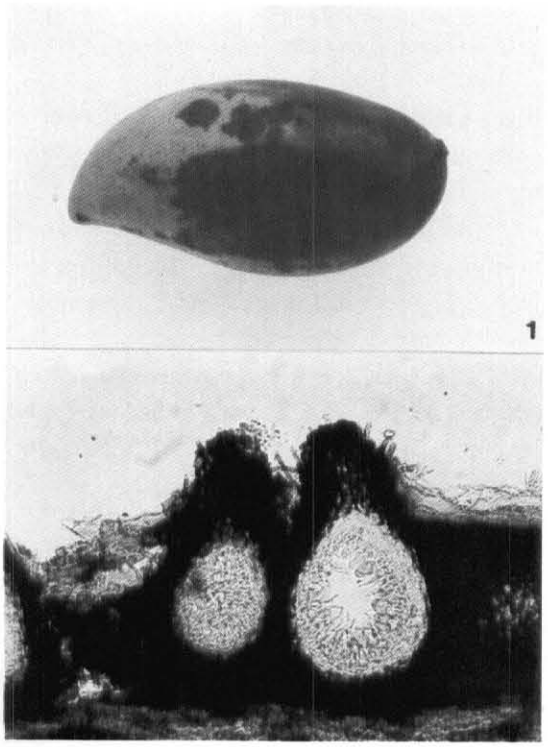

Figure 2.

1. Symptom of Botryodiplodia fruit rot on mango fruit
2. The fungus, *Botryodiplodia theobromae*

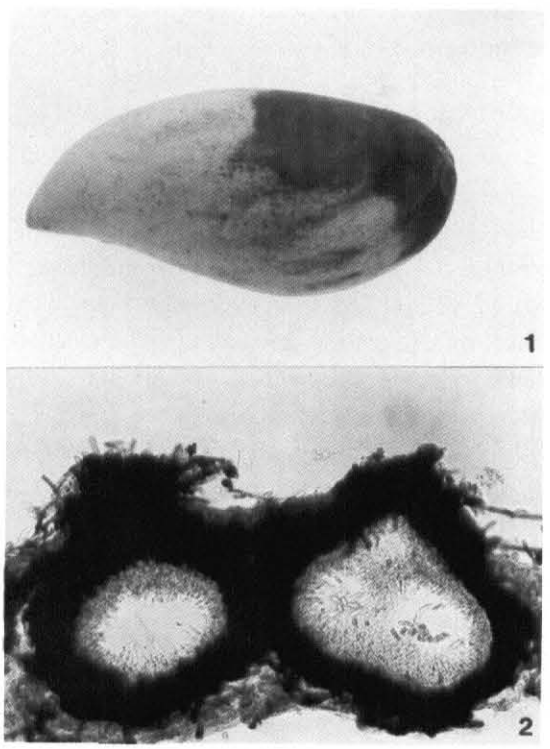

Figure 4.

1. Symptom of Dothiorella fruit rot on mango fruit
2. The fungus, *Dothiorella mangiferae*

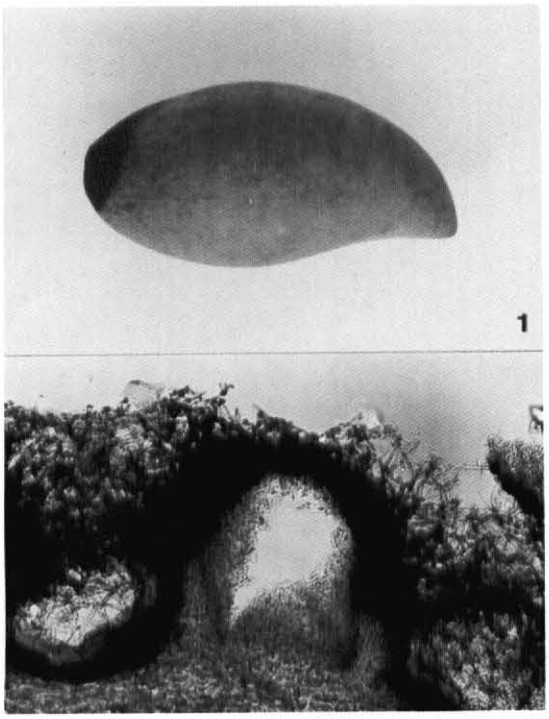

Figure 5.

1. Symptom of Phomopsis fruit rot on mango fruit

2. The fungus, *Phomopsis mangiferae*

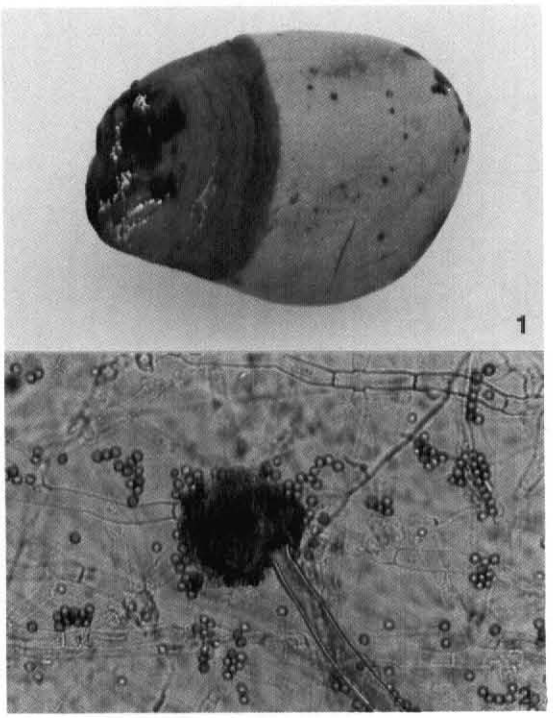

Figure 6.

1. Symptom of Aspergillus fruit rot on mango fruit

2. The fungus, *Aspergillus niger*

Pycnidia of the fungus *Dothiorella dominicana* were generally produced in the superficial layers of the peel, and on further development, burst through the epidermis and ejected their conidia. The pycnidia measured 122.5 – 186.4 × 81.7 – 268.1 μ black, thick-walled, globose and has a papillate ostiole. Conidia were thin-walled and hyaline; they were fusoid or avoid and measured 3.9 – 5.1 × 17.9 – 22.9 μ (Figure 3) but pycnidia of *Dothiorella mangiferae* measured 114.4 – 208 × 124.8 – 343.2 μ black, thick-walled, globose or subglobose, ostiolate. Conidia were hyaline, thin-walled, ovoid and measured 3.9 – 5.2 × 15.6 – 23.4 μ (Figure 4)

Phomopsis fruit rot

Infection started from stem end and spread along the fruits. The affected tissue turned to brown and pulpy. The skin become soft, black, wrinkled and encrusted with pycnidia.

Pycnidia of the fungus, *Phomopsis mangiferae* submersed in the peel of infected fruits. They burst through epidemis and ejected their conidia. The pycnidia black, thick-walled, sometimes produced in stroma measured 135.52 – 457.6 × 156 – 312 μ. Conidia one-celled, hyaline, oval-shaped measured 2.6 × 3.9 – 10.4 μ (Figure 5)

Aspergillus rot

Infection of *Aspergillus niger* mostly started at stem end but sometime at wounded parts. The infection spread uniformly, causing progressive brownish black discoloration and softening. The skin became wrinkled.

The conidial head of the fungus were

radiated. Conidiophores were smooth hyaline and jointly brownish near the apex; vesicle glolose or nearly so; matulae and phialides were produced; conidia more or less glolose, often very rough or echinulated mostly 4 – 5 μ in diameter, very dark. (Figure 6)

LITERATURE LITED

Gangolly, S.R., R. Singh, S.L. Katyal and D. Singh. 1957. The Mango. Indian Council of Agricultural Research, New Delhi. 530 p.

Kurup, C.G.R., U.N. Rao, P. Kachroo and S.N. Tata. 1967. The Mango : A Handbook. Indian Council of Agricultural Research, New Delhi. 120 p.

Pathak, V.N. and D.N. Srivastava. 1968. Controlling stem end rot of ripe mango. Indian Farming. 18(5): 43 – 45.

Quimio, T.H. and A.J. Quimio. 1974. Pathoganicity of mango anthracnose. Philippine Agriculturist. 58: 323 – 329.

Vock, N.T. 1978. A Handbook of Plant Disease in Color Vol. I Fruits and Vegetables. Queenland Dept. of Primary Industries. Queensland.