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A NEW LEAF SPOT AND FRUIT ROT OF PAPAYA CAUSED BY *MYROTHECIUM RORIDUM* TODE EX. FRIES

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PAPAYA (*Carica papaya* L.), one of the most important fruit crops of India is grown extensively for its exceptional nutritive value. Because of the wide range of climatic and soil conditions under which this crop is grown and also because of the widely varying genetic characters of the varieties in cultivation, several fungal pathogens are known to cause severe damages[1]. During September–October 1987, the incidence of a new leaf spot and fruit rot was noticed in a severe form on papaya cultivar Co 2 at the University Orchard, Coimbatore.

The leaf spot occurred on papaya plants of all age groups, but was most serious on two-month-old crops. Symptoms appeared in the form of small dirty yellow to brown-coloured water-soaked spots on the leaves having brown to violet periphery and a chlorotic halo around (figure 1). Later, the spots coalesced and the entire leaf dried up. On unripe papaya fruit, the fruit rot was characterized by the production of irregular, water-soaked lesions which gradually enlarged and got covered by whitish grey fungal growth. The fungus advanced deep into the fruit and caused rotting and disintegration. The rot rapidly destroyed the entire fruit and quickly spread to other fruits.

Figure 1. Dirty yellow to brown-coloured water soaked spots with chlorotic halo.

The fungus was isolated on potato dextrose agar medium from the diseased leaves and fruits. Further purification of the fungus was carried out by a single spore method of Keitt[2] as modified by Ezkiel[3]. The disease was reproduced on two-months-old plants and unripe papaya fruits of Co 2 cultivar by inoculating the aqueous spore suspension (10^5/ml) through pin prick injury. Typical leaf spot and fruit rot symptoms appeared five days after inoculation. The symptoms were similar to those described for naturally infected plants. None of the controls showed any infection. The pathogen was reisolated on potato dextrose agar. The conidia were hyaline, single-celled, cylindrical to elliptical, aggregated in the form of a gelatinous mass and measured 6.7–9 μm × 2.1–2.7 μm (average 7.8 × 2.4 μm). The characters of the fungus agreed with those described by Saccardo[4] and Munjal[5]. The causal organism of leaf spot and fruit rot of papaya was therefore identified as *M. roridum* Tode ex. Fries. The natural occurrence of this pathogen on papaya has not been reported so far and appeared to be the first record.

In studying the possible source of conidial infection on the leaves and fruits of papaya, artificial inoculation was made with conidial suspension (10^5/ml) on the leaves of other vegetation growing in close proximity. Of the twenty economical plants tested, viz., *Zea mays*, *Sorghum bicolor*, *Gossypium hirsutum*, *Saccharum officinarum*, *Pennisetum typhoides*, *Oryza sativa*, *Cajanus cajan*, *Cicer arietinum*, *Phaseolus vulgaris*, *Dolichos lablab*, *Vigna sinensis*, *Phaseolus aureus*, *Phaseolus mungo*, *Glycine max*, *Pisum sativum*, *Arachis hypogea*, *Dolichos biflorus*, *Canavalis ensiformis*, *Cyamopsis tetragonoloba* and *Sesamum indicum*, only *Gossypium hirsutum* was rapidly infected by the pathogen. The symptoms of the disease were mainly confined to the leaves. The pathogen produced small, circular, tan-coloured spots with broad violet to brown margin surrounded by a zone of translucent areas within 7 days after inoculation. These lesions, later on enlarged and became irregular. In severe cases, the lesions coalesced and the entire leaf dried up. The pathogen has been known to cause leaf blight disease on *Gossypium* spp.[6] and *Withania somnifora* Dunal[7]. The pathogenicity of *M. roridum* lead us to consider its potential danger to the important fruit, fibre and medicinal crops of our country.

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ANTHRACNOSE — A NEW DISEASE OF SMALL CARDAMOM

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Small cardamom (*Elettaria cardamomum* Maton) popularly known as the 'Queen of Spices' is an important spice crop cultivated on a large scale in the western ghats of South India. The crop is susceptible to many fungal, bacterial and viral diseases which seriously affect the production[1]. During 1985–86 crop season, incidence of a new disease on cardamom capsules in the form of brown spots was observed. Subsequently, similar symptoms on capsules were noticed in many cardamom plantations in Udumbanchola and Vandiperiyar areas of Idukki District of Kerala and Anamalai areas in Tamil Nadu. The disease was noticed during September to December. In the subsequent cropping season, the disease appeared in increasing proportions ranging between 10 and 28% in Anamalai areas.

Symptoms of the disease, first appeared on fresh capsules as small water soaked spots, later developed into characteristic reddish brown lesions (figure 1). These lesions were round to oval in shape ranging between 1 and 2 mm in diameter and on maturation developed characteristic reddish brown colour with more or less light coloured soft sunken centres. The lesions showed distinct periphery and depressed centres resembling typical anthracnose symptoms. The affected capsules showed 1–6 lesions per capsule. Disease symptoms were clearly visible on cured capsules also.

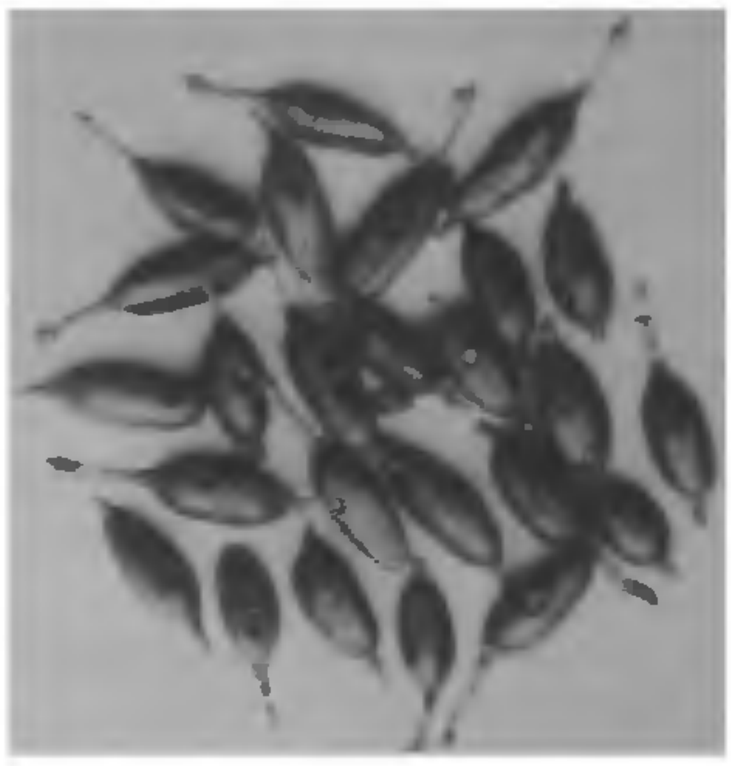

Figure 1. Symptoms of anthracnose on green capsules of cardamom.

The fungus was isolated on potato dextrose agar medium by plating the young lesions under aseptic conditions.

Microscopic and cultural studies revealed the association of the fungus *Colletotrichum gloeosporioides* (Penz.) Penz. & Sacc. with the disease. The fungus produced dark brown coloured setae and abundant cylindrical straight conidia ranging from 12 to 24 μm × 2.4 to 5 μm within one week after plating in the medium. The pathogenicity of the fungus was tested by spraying the conidial suspension from 7-day-old cultures[2] on capsules of live plants in the field and on detached capsules under laboratory conditions. The capsules were surface-sterilized with 1% sodium hypochlorite and thoroughly washed with sterile water just before inoculation. Symptoms typical of anthracnose lesions were observed on the 10th day after inoculation. In detached capsules tested under laboratory conditions symptoms initiated within 7 days after inoculation. The fungus was reisolated from artificially infected capsules. There was no significant differences in disease symptoms when pathogenicity tests were done under *in vitro* and *in vivo* conditions except that in the former the symptoms initiated within a shorter period. The culture has been deposited in the Herbarium of CMI, Kew, England under reference No: I.M.I. 318652.

Colletotrichum sp. has been reported to cause leaf spot in another zingiberaceous crop, turmeric[3] (*Curcuma longa*) and in a wide variety of other crops[4]. The *Xanthomonas* sp. induced blister-like symptoms on cardamom capsules reported earlier[5] seems to be entirely different from the present one. A review of the literature revealed that *C. gloeosporioides* has not earlier been reported as pathogenic in cardamom. Therefore, this report