

A New Leaf Spot Disease of Mango

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ABSTRACT

Pandey, R. S., Bhargava, S. N., Shukla, D. N., and Khati, D. V. S. 1981. A new leaf spot disease of mango. *Plant Disease* 65:441-442.

A leaf spot disease of mango (*Mangifera indica*) caused by the *Scytalidium* state of *Hendersonula toruloidea* was observed for the first time near Allahabad, India. The pathogen can cause leaf spots on several improved cultivars of mango.

A survey of orchards in 1978 and 1979 during and after rains showed a widespread leaf spot disease of mango (*Mangifera indica* L.) near Allahabad and in adjacent areas of Banda, Fatehpur, Jaunpur, Mirzapur, and Pratapgarh districts. Infection varied greatly from one location to another, ranging from a trace to 40% or more. The disease is common in nursery stocks.

Repeated isolations revealed the *Scytalidium* state of *Hendersonula toruloidea* Natrass in infected tissues. We give here a brief description of the disease and the pathogen and report results of tests on pathogenicity, cultivar susceptibility, and host range.

MATERIALS AND METHODS

Isolations were made by placing small, surface-sterilized (dipped in 1:1000 mercuric chloride solution for 1 min and washed three or four times in sterilized, distilled water) pieces of infected tissue on potato-dextrose agar (PDA). Cultures were incubated at 25 ± 1 C. The organism was purified by single-spore culture and maintained on PDA.

A 10-day-old culture of the *Scytalidium* state of *Hendersonula toruloidea* on PDA was used for pathogenicity tests. Pathogenicity of the fungus was confirmed by inoculating injured as well as uninjured young (about 15 days old) and old (3-4 mo old) mango leaves attached to the plants (3-4 mo old) in pots. Mycelial and spore inoculum or spore suspension alone was used. Both injured and uninjured leaves on control plants were sprayed with sterilized, distilled water.

Inoculated and control leaves were covered with polyethylene bags, and plants were kept in shade at temperatures of 30-35 C. When disease symptoms were observed, the pathogen was isolated as described and compared with original culture.

The leaves of eight high-yielding mango cultivars—Bombay Green, Langra, Chausa, Safeda Lucknow, Fazli,

Dashehari, Kishanbhog, and Rataul—were artificially inoculated to test cultivar susceptibility. To study the host range of the pathogen, cross-inoculations were made on leaves of papaya (*Carica papaya* L.), fig (*Ficus carica* L.), guava (*Psidium guajava* L.), pomegranate (*Punica granatum* L.), lime (*Citrus aurantifolia* (Christm.)), and Indian plum (*Ziziphus mauritiana* Lam.). Leaves were examined for infection after 10-15 days.

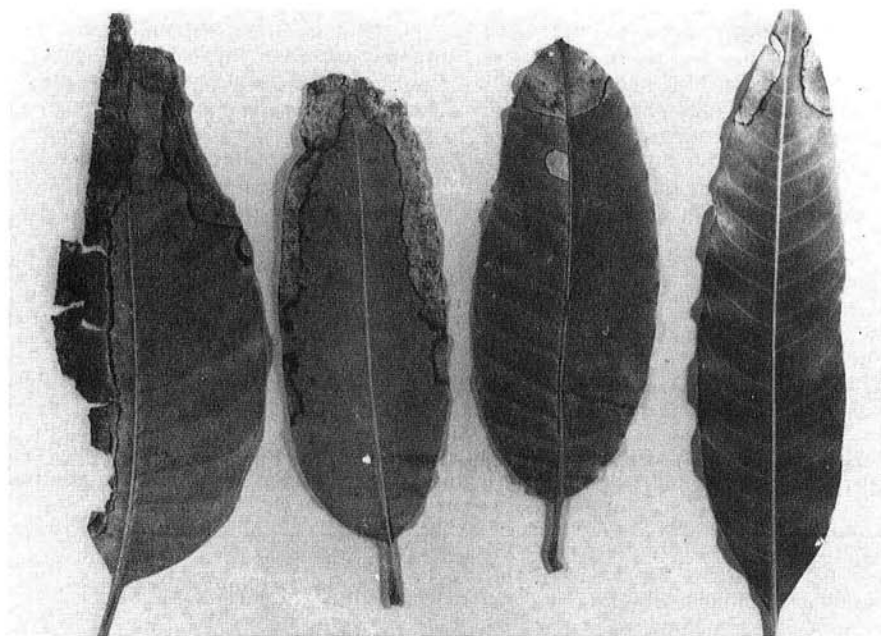


Fig. 1. Naturally infected mango leaves.

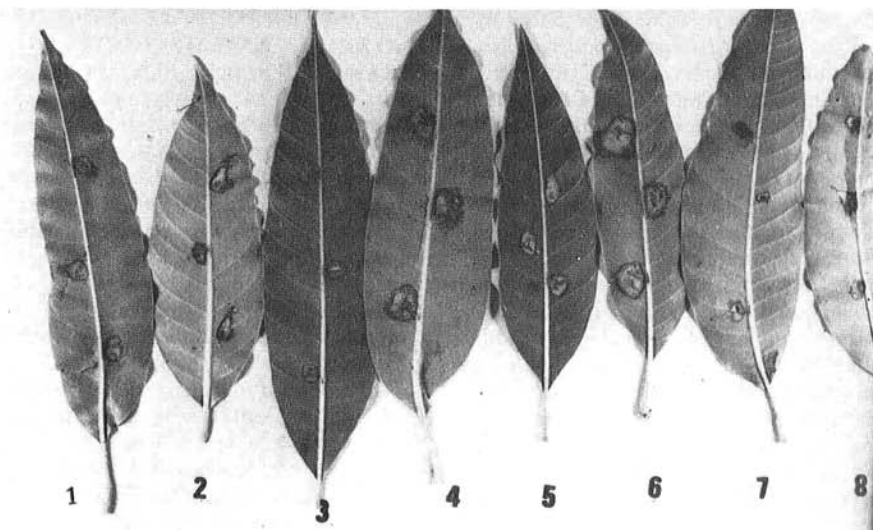


Fig. 2. Artificially infected leaves of mango cultivars 1) Bombay Green, 2) Langra, 3) Chausa, 4) Safeda Lucknow, 5) Fazli, 6) Dashehari, 7) Kishanbhog, and 8) Rataul.

RESULTS

Symptoms. The disease first becomes visible as a brownish spot on the upper surface of the mango leaf. Two or more diseased spots later coalesce into larger, irregular spots. In advanced stages, the infected area shreds, and in some cases, shot holes appear. As the disease progresses, the leaves may curl. The centers of the diseased spots become ash colored (Fig. 1), and conidial masses appear on the undersurface of infected leaves.

The disease was prevalent during July to October, in periods of high humidity (70–95% relative humidity) at temperatures of 30–35 C.

Pathogenicity tests. In the pathogenicity test with spore suspension on uninjured leaves, symptoms appeared at leaf margins and proceeded toward the midrib. Younger leaves were infected more readily than older leaves.

Just mature or ripe mango fruits with only slight injury developed rot when packed with diseased leaves and kept at high humidity at 30 C under a bell jar. Needle-injured fruits also rotted when sprayed with spore suspension of the fungus.

Morphology. The fungus cultured on PDA grew 3–5 cm in diameter per week.

The colony was circular, aerial mycelium was white and dense, and hyphae were smooth, colorless, branched, septate, and 3.8 μ in breadth. Cells fragmented and formed anthroconidia, varying from globose to oblong and rarely 1-septate.

Pycnidia are dark green to black carbonaceous and occur singly or in small groups on the surface of the medium. They range from 80 to 230 μ in diameter, with a short, beaked ostiole. Inside the pycnidium, the spores are hyaline to light green, simple, smooth, and ellipsoidal, borne on short, hyaline sporophores, measuring 6.0–7.7 \times 3.8 μ . Immediately after extrusion from the pycnidium, two or more spores may frequently be seen attached by their ends in the form of a chain.

Cultivar susceptibility and host range. The fungus produced leaf spots on all eight mango cultivars tested (Fig. 2). Dashehari and Safeda Lucknow cultivars were most susceptible.

Cross-inoculations showed that the fungus was also capable of producing disease on leaves of papaya, fig, guava, and pomegranate, but not on lime or Indian plum.

DISCUSSION

This is the first report of the

Scytalidium state of *Hendersonula toruloidea* causing leaf spot of mango in India, although Laxminarayana and Reddy (3) reported it in association with a postharvest disease of mango fruit. The disease appears to have existed for some time before the pathogen was identified. The fungus has been reported on various plants from different parts of the world (1,4). According to Ellis (2), the pathogen has a wide host range.

ACKNOWLEDGMENTS

Thanks are due to the director, Commonwealth Mycological Institute, Kew, Surrey, England, for confirming the isolate (IMI No. 237755); to the head, Botany Department, University of Allahabad, for providing laboratory facilities; and to A. Singh, for his cooperation. Financial assistance from the Council of Scientific and Industrial Research (CSIR) to R. S. Pandey is gratefully acknowledged.

LITERATURE CITED

1. Ale-Agha, N. 1976. Pathological problems important for fruit growing in Mediterranean region. In: Proceedings of the Fourth Congress of the Mediterranean Pathological Union. Poljopr. Znan. Smotra 39. 624 pp.
2. Ellis, M. B. 1976. More Dematiaceous Hyphomycetes. Commonw. Mycol. Inst., Kew, Surrey, England. 507 pp.
3. Laxminarayana, P., and Reddy, S. M. 1976. Some observations on the post-harvest diseases of mango (*Mangifera indica* Linn.). (Abstr.) Proc. Nat. Acad. Sci., India.
4. Rayner, A. D. M. 1977. Fungal colonization of hardwood stumps. Trans. Br. Mycol. Soc. 69:291.