

Cylindrocladium Root Rot of Nutmeg in South India

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ABSTRACT

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A new root rot disease of nutmeg was observed in Calicut, Kerala, India. The causal organism was identified as *Cylindrocladium camelliae*.

Nutmeg (*Myristica fragrans* Houtt.), an evergreen tree native to the Moluccas, is cultivated in many tropical countries of both hemispheres for the spices nutmeg and mace. In March and April of 1978, the roots of wilted and dead 8-yr-old nutmeg plants 6-9 ft tall were found to be infected by *Cylindrocladium camelliae*

Venkataramani & Venkata Ram in the spice garden of Calicut University, Kerala, India. Twenty-five of 150 plants were affected by the disease. This is the first known association of *C. camelliae* with root rot of nutmeg.

MATERIALS AND METHODS

Isolation of the pathogen. Rotted roots were cut into 2-cm pieces, surface-sterilized in 0.1% mercuric chloride for 2 min, washed in six changes of sterile water, and plated on potato-dextrose agar. Three pieces were plated in each of six plates, and plates were incubated at

24-29 C for 1 wk.

Pathogenicity. Inoculum for pathogenicity tests was prepared by growing the fungus at room temperature (25-30 C) for 4 wk on potato-dextrose broth amended with 2 g/L of yeast extract. Mycelial mats were removed from six culture flasks, washed with sterile water, and shredded in a blender with sterile water. The mycelial suspension was made up to 300 ml.

Nutmeg seedlings 6 mo old raised in sterilized sand were pulled, and their roots were thoroughly washed in sterile water to remove sand. Roots of 10 test plants were dipped in the mycelial suspension and transplanted into 18 x 24 cm plastic bags containing sterilized soil. Ten plants were kept as controls. Plants were maintained in the greenhouse at 25-30 C and watered with tap water.

RESULTS AND DISCUSSION

Disease symptoms in the field. The

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initial symptoms on aboveground parts were drooping of the leaves and weak development of branches. Defoliation and drying of branches were observed at later stages, leading to death of the plant within 4–6 wk. Circular or elongated brownish patches (2–4 mm in diameter) were found on the bark of the taproot and collar. Feeder roots were scanty or absent. Below the brownish patches on the root, the discoloration extended into the wood. In most cases, the bark of affected roots peeled off easily, leaving discolored scars or depressions.

The pathogen. Isolations from diseased root tissues consistently yielded a *Cylindrocladium* sp., identified as *C. camelliae* from cultural and microscopic

characters (1,4). A culture of the fungus has been deposited at the Commonwealth Mycological Institute, Kew, Surrey, England (IMI 229311).

Pathogenicity. Symptoms developed on the foliage 70 days after inoculation. The symptoms were similar to those observed under natural conditions. Plants died after 80–85 days. Roots of dead plants had brown, discolored patches. *C. camelliae* was reisolated from diseased tissues. All controls remained healthy.

C. camelliae is known to cause a minor root rot of tea in South India (3) and a leaf spot of *Wisteria sinensis* Sweet (2). This is the first report of *C. camelliae* causing root rot in nutmeg.

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