

Leaf Blast of Turmeric

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ABSTRACT

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A leaf blast caused by *Pyricularia curcuma* has been found on turmeric, probably the only host. Six of eight cultivars were immune.

A severe leaf blast of turmeric (*Curcuma longa* L.) caused by a species of *Pyricularia* was observed for the first time in India in 1977. The disease usually occurs when the crop is about 5 mo old. Spots appear on older leaves, leaf sheaths, and petals (Fig. 1A and B). The first and second youngest leaves are free from infection until the plants are nearly mature. A yellow halo is evident around the spots when the leaf is held against light. With severe spotting, leaves turn yellow and then dry up. The sclerotial stage of the pathogen appears with crop maturity on severely infected leaves. Sclerotia usually form a ring at the periphery of the spots (Fig. 1C). The sclerotia are black, dotlike, and endophytic and measure 100–250 μm in diameter. This is believed to be the first report of sclerotia in *Pyricularia* in nature.

Single spore culture of the pathogen was obtained on potato-dextrose agar (PDA). There was scanty sporulation on turmeric leaf decoction agar. When sprayed on healthy turmeric plants, mycelial and spore suspension from culture produced typical spots after eight days.

Three hosts of *Pyricularia*—*Oryza sativa* L., *Zingiber officinale* Rosc., and *Pennisetum typhoides* (Burm.f.) Stapf. & Hubb.—were inoculated in the field with the *Pyricularia* sp. Healthy turmeric plants were inoculated as controls. Symptoms developed only on turmeric.

Inoculations of turmeric with an isolate of *P. oryzae* also were negative.

Leaf debris of the previous season's crop with lesions bearing overwintered sclerotia were cut into 0.2-mm thick sections, fixed onto slides, and incubated in moist chambers at room temperature (25–32 C). The sclerotia germinated after 48 hr by conidiophores and conidia and/or by germ tubes. Cultures obtained from germinating sclerotia were identical with the original culture. Sclerotiumlike structures formed in old cultures obtained from germinating sclerotia. Similar structures were reported in cultures of *Pyricularia* on ginger (2).

Our isolates of the turmeric pathogen were identical to *Dactylaria curcuma* that Sawada recorded (3) on *C. aromatica*. The name *D. curcuma* was not validly published because no Latin diagnosis was given by Sawada. Asuyama (1) considered *D. curcuma* to be *P. curcuma* but also gave no Latin diagnosis. The present fungus is referred to as *P. curcuma*, and a Latin description is given to validate the later name:

Pyricularia curcuma Asuyama

Fruiting mostly hypophyllous, conidiophores pale brown, up to 280 μm long, 3–4.5 μm thick, 1–2 septate, and sometimes with a basal swelling up to 9 μm in diameter. Conidia pyriform, pale yellow, 1–2 septate, often with a small basal appendage, 16–23 \times 7–9 μm . Colonies on PDA are ash-gray, compact, raised, leathery in texture, with radial folds.

On the leaves of *Curcuma longa* L., 9 August 1977, at Diphu, Assam, India leg Y. Rathaiah (IMI 216922).



Fig. 1A–C. Symptoms of *Pyricularia curcuma* on turmeric: (A) Infection spots on leaf. (B) Infection spots on inflorescence. (C) Sclerotia (arrows) around leaf spots.

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Pyricularia curcumae Asuyama

Fruitificationes generatin hypophyllae; conidia pyriformia, flavida, 1-2 septata, 16-23 × 7-9 μm.

Holotypus supra folia *Curcumae longae* L. die 9 augusti 1977 prope Diphu in regione assamica ab Y. Rathaiah lactus in herbario CMI sub accessionis no. 216922 positus est.

Eight cultivars of turmeric—Mikkir type, CLL 325, CLI 326, CLL 327, Ca 69, Sugandham, Kasturi, Rajpuri—were tested for their reaction to *P. curcumae* in the field. Cultivar Ca 69 belongs to *C.*

aromatica and the rest belong to *C. longa*. Infection on the cultivars was either absent or severe. The cultivar Mikkir type, on which the fungus was first observed, was the most susceptible, followed by Kasturi. The remaining six cultivars were immune. Cultivars of turmeric immune to leaf blast also were immune to leaf spot caused by *Taphrina maculans* but were susceptible to leaf blotch caused by *Colletotrichum capsici*.

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