

Leaf Spot Disease of *Strychnos nux-vomica* Caused by *Colletotrichum gloeosporioides* in South India

K. V. SANKARAN, M. U. RAHMAN, and S. ZACHARIAH, Mycology Research Laboratory, Department of Botany, Calicut University, 673 635, Kerala, India

ABSTRACT

SANKARAN, K. V., M. U. RAHMAN, and S. ZACHARIAH. 1980. Leaf spot disease of *Strychnos nux-vomica* caused by *Colletotrichum gloeosporioides* in South India. *Plant Disease* 64: 953-954.

A new leaf spot disease of *Strychnos nux-vomica* was observed in Calicut, Kerala. The causal organism was identified as *Colletotrichum gloeosporioides*.

Strychnos nux-vomica L. is a moderate sized, deciduous tree that grows wild and is native to India and other parts of tropical Asia. Seeds of this tree yield strychnine; leaves, fruits, and roots are also used medicinally.

In 1978 and 1979 a leaf spot disease of *S. nux-vomica* caused by *Colletotrichum gloeosporioides* (Penz.) Sacc. was prevalent on the Calicut University campus, Kerala. Limited surveys in the state showed that the disease infected about 90% of mature leaves in the northern districts of Kerala. This is the first report of *C. gloeosporioides* causing a leaf spot in *S. nux-vomica*.

MATERIALS AND METHODS

Isolation of the pathogen. Diseased portions of leaves were removed and surface-sterilized in 0.1% mercuric chloride, washed in six changes of sterile distilled water, plated on potato-dextrose agar (PDA), and incubated at 24–28 C for 1 wk.

Pathogenicity. Pathogenicity was studied on both detached and attached leaves. Fresh, mature, healthy leaves of *S. nux-vomica* were washed thoroughly in sterile tap water and blotted dry with sterile filter paper. Leaves were placed in sterile petri dishes lined with moist blotter paper, and a sterile brush was used to transfer conidia to drops of sterile distilled water placed at marked regions on the adaxial and abaxial surfaces of the leaves. Three regions were marked and inoculated on each surface of injured (pin pricking method) and uninjured leaves. A 10-day-old culture of the fungus heavily sporulating on PDA served as the source of inoculum. Six replicate plates, each with two inoculated leaves, and six controls were incubated at 24–26 C in the dark.

Mature, 1-yr-old, intact leaves of healthy *S. nux-vomica* plants were sprayed with a hand sprayer (5 ml per

leaf) with a conidial and mycelial suspension of *C. gloeosporioides* until runoff. Control plants were sprayed with sterile distilled water, 5 ml per leaf. The inoculum was prepared by adding 50 ml of sterile distilled water to each petri dish with 2-wk-old cultures of *C. gloeosporioides* on PDA. Six plants were used for inoculation, and six were kept as controls. Inoculated leaves and controls were covered with plastic bags lined with moist blotter paper for 48 hr and maintained in a shady place in the garden where the temperature varied from 25 to 29 C.

RESULTS

Natural symptoms. The initial symptoms were small grayish brown spots usually surrounded by a yellow halo (Fig. 1). The spots enlarged rapidly, coalesced, and often involved large areas of the leaf. In the summer, the lesions turned ash gray on the adaxial surface of the leaf, but the abaxial surface retained its original color. Under other conditions, the leaf spots appeared grayish brown on both surfaces. Slight blistering of the infected region was often evident. With severe spotting, the leaves gradually dried up. Infection was restricted to the mature leaves. Young leaves were always free from infection but also became infected at maturity.

The pathogen. Diseased leaf tissues consistently yielded a fungus in culture, identified as *C. gloeosporioides* by cultural and microscopic characteristics.

Pathogenicity. Symptoms developed at the inoculated regions of the detached leaves in 4–5 days. Adaxial and abaxial surfaces of injured and uninjured leaves were all infected. Leaves that had been sprayed with conidial and mycelial suspension showed symptoms in 6 days. *C. gloeosporioides* was reisolated from diseased tissues of detached and intact leaves. All controls remained healthy.

DISCUSSION

C. gloeosporioides is worldwide in

distribution and has an extremely wide host range (2,10). In India it causes a pod rot of cacao (12) and anthracnose in nutmeg fruits (13), coriander (11), cashew (16), *Citrus* spp. (7), jute (1), *Annona reticulata* L. (6), mango, guava, papaya, and chilli (4). *C. gloeosporioides* also causes leaf spots of *Artocarpus incisa* L. (3), peach (17), *Alstonia scholaris* R. Br. (15), *Theobroma cacao* L., *Santalum album* L., *Saraca indica* L., *Dioscorea alata* L., *Arachis hypogaea* L., and other cultivated and wild plants (4).

Anthracnose of *Citrus* spp. (9), avocado (5), mango (14), and papaya (18), caused by *C. gloeosporioides*, occurs in other parts of the globe also. Dakwa and Danquah (8) reported leaf blight of cocoa caused by *C. gloeosporioides* from Ghana.

Plants such as *Plumeria acutifolia* Poir. and *Piper nigrum* L. growing near *S. nux-vomica* plants are known hosts of *C. gloeosporioides* (4,19). Leaves of these plants were found to be infected by *C. gloeosporioides* at the time that leaf

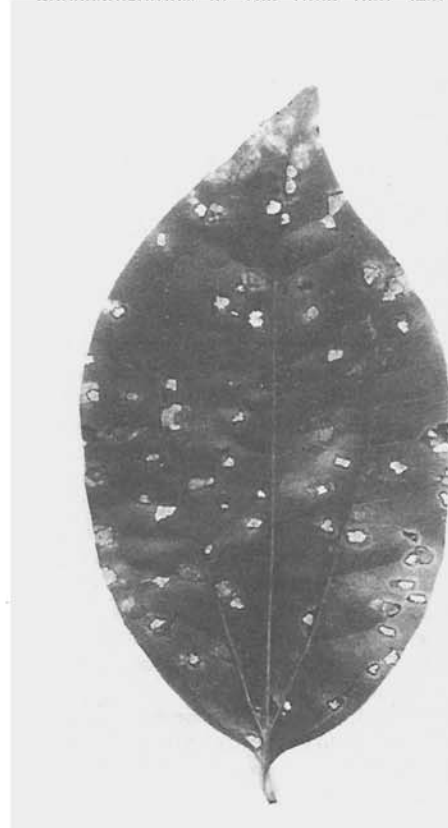


Fig. 1. Typical leaf spot symptoms on *Strychnos nux-vomica* leaf infected with *Colletotrichum gloeosporioides*.

spotting was seen in *S. nux-vomica* plants. These may have been sources of inoculum.

ACKNOWLEDGMENT

We thank J. A. von Arx, Centraalbureau voor Schimmelcultures, Baarn, The Netherlands, for confirming the identification of the fungus.

LITERATURE CITED

1. ANONYMOUS. 1968. Annual report of Jute Agricultural Research Institute, Barrackpur (1966-68).
2. ARX, J. A. von. 1957. Die Arten der Gattung *Colletotrichum*. Phytopathol. Z. 29:413-468.
3. BALAKRISHNAN, S., and M. R. MENON. 1970. A new leaf disease of *Artocarpus incisa* L. Agric. Res. J. Kerala 8:86-88.
4. BILGRAMI, K. S., JAMALUDDIN, and M. A. RIZWI. 1979. Fungi of India. Part I. List and References. Today and Tomorrow Printers and Publishers, New Delhi. 467 pp.
5. BINYAMINI, N., and M. SCHIFFMANN-NADEL. 1972. Latent infection in avocado fruits due to *Colletotrichum gloeosporioides*. Phytopathology 62:592-594.
6. BISWAL, B. K., and S. N. DAS. 1969. Symptomatology and pathogenicity of *Colletotrichum gloeosporioides* causing anthracnose of *Annona reticulata*. J. Agric. Sci. O.U.A.T. 1:9-13.
7. CHAUDHURI, H. 1936. Diseases of citrus in the Punjab. Indian J. Agric. Sci. 6:72-109.
8. DAKWA, J. T., and O. A. DANQUAH. 1978. A *Colletotrichum* leaf blight of cocoa in Ghana. Plant Dis. Rep. 62:369-373.
9. FAWCETT, H. S. 1936. Citrus Diseases and Their Control. McGraw-Hill Book Co., New York. 656 pp.
10. MORDUE, J. E. M. 1971. *Glomerella cingulata*. Set 32, No. 315. Descriptions of Pathogenic Fungi and Bacteria. Commonw. Mycol. Inst., Kew, Surrey, England.
11. MOSES, G. J., and P. GOVINDA RAO. 1969. Coriander anthracnose caused by *Glomerella cingulata*, a new record from India. Indian Phytopathol. 32:145-146.
12. REDDY, M. K., and R. CHANDRAMOHANAN. 1976. Occurrence of pod rot of cacao caused by *Colletotrichum gloeosporioides* in India. J. Plant. Crops 4:14-15.
13. SANKARAN, K. V., M. U. RAHMAN, and R. RAI. 1979. Isolation and infection studies with *Colletotrichum gloeosporioides* causing anthracnose of nutmeg (*Myristica fragrans*) fruits. Proc. 2nd Annu. Symp. on Plantation Crops, Nilgiris, 1979. In press.
14. SIMMONDS, J. H. 1941. Latent infections in tropical fruits discussed in relation to the part played by species of *Gloeosporium* and *Colletotrichum*. Proc. R. Soc. Queensld. 52:92-120.
15. SINGH, D. V., and R. L. KATIYAR. 1969. A new fungal disease of *Alstonia scholaris* R. Br. Sci. Cult. 35:584-585.
16. SINGH, S., H. S. SEHGAL, P. C. PANDEY, and B. K. BAKSHI. 1967. Anthracnose disease of cashew (*Anacardium occidentale* L.) its cause, epidemiology and control. Indian For. 93: 374-376.
17. TANDON, R. N., and A. VERMA. 1963. Pathological studies of *Colletotrichum gloeosporioides* causing leaf spot disease of *Prunus persica* Stokes. Proc. Nat. Acad. Sci. India 33(B):411-417.
18. WARDLAW, C. W., E. R. LEONARD, and R. E. D. BAKER. 1934. Observations on the storage of various fruits and vegetables. Trop. Agric. (Trinidad) 11:230-231.
19. WILSON, K. I., and P. C. JOSE. 1966. Leaf blight of *Plumeria acutifolia* Poir. Indian Phytopathol. 19:389.