

# *Phomopsis urenae* sp. nov. causing stem canker on *Urena lobata*

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## ABSTRACT

Punithalingam, E.; Freire, F.C.O.; Poltronieri, L.S. *Phomopsis urenae* sp. nov. causing stem canker on *Urena lobata*. *Summa Phytopathologica*

A new species of an anamorphic (mitosporic) fungus, is described as *Phomopsis urenae*. The fungus causes typical stem canker symptoms on *Urena lobata* L., which shows conspicuous cracking and gum exudation. The infection has been responsible for the death of a large number of plants in areas of small holders at Capitao Poco county, Para State (Brazilian Amazonian

Region). Pathogenicity tests conducted with two-months old plants proved positive, 30 to 40 days after inoculation. *P. urenae* has hyaline, trimorphic conidia and dark brown to black, subglobose to obpyriform pycnidia on Oat-Agar medium when exposed to near UV light.

Additional keywords: anamorphic fungus, new species, Brazil.

## RESUMO

Punithalingam, E.; Freire, F.C.O.; Poltronieri, L.S. *Phomopsis urenae* sp. nov. causando cancro do caule em *Urena lobata*. *Summa Phytopathologica*

Uma nova espécie de fungo anamórfico (mitospórico), denominada *Phomopsis urenae*, é descrita pelos autores. O fungo causa típicos sintomas de cancro no caule da malva (*Urena lobata* L.), provocando rachaduras e exsudação de resina. O fungo tem causado a morte de inúmeras plantas adultas de malva na região de Capitão Poço, Estado do Pará. Testes de patogenicidade em

plantas com 2 meses de idade revelaram-se positivos, cerca de 30 a 40 dias após a inoculação. O fungo produz conídios dos tipos a, b e k, além de abundante formação de picnídios escuros, subglobosos, às vezes com longo pescoço, em meio de aveia-ágar sob luz ultra-violeta.

Palavras-chave adicionais: fungo anamórfico, nova espécie, Brasil.

Plant-pathogenic fungi belonging to the genus *Phomopsis* cause diseases on numerous plant species. Isolates of *Phomopsis* are found throughout the tropics on a wide range of plant hosts, including cultivated and non-cultivated species SUTTON (3). In the course of a taxonomic survey conducted on microfungal population in the State of Para (Brazilian Amazonian Region), an isolate of an anamorphic fungus was obtained from plants of *Urena lobata* L. showing typical stem canker symptoms. Light microscopy studies revealed that this fungus is a species belonging to the genus *Phomopsis*. A survey of the relevant literature UECKER (2) and KIRK & SUTTON (1) indicate that no species of *Phomopsis* has been reported from *Urena* species. In view of this and due to the fact that it is able to infect plants of *U. lobata* we describe it here as a new species.

Infected stems of *U. lobata* collected at Capitao Poco county were placed in plastic bags and transported to the Plant Pathology Laboratory of EMBRAPA/CPATU, in Belem city (State

of Para). Surface sterilized pieces of infected stem tissues were plated on to water-agar and developing fungal colonies transferred to slants of Oat-Agar (OA) medium and exposed to near UV light on a 12h diurnal cycle at room temperature (24 – 28°C). About 20 two-month old plants grown in polyethylene bags with autoclaved soil were inoculated by placing pieces of seven-days old culture on wounded stems. Culture medium plugs with no mycelium were placed into incised plant stems to serve as controls. After inoculation plants were kept in a humid chamber for 72 hours.

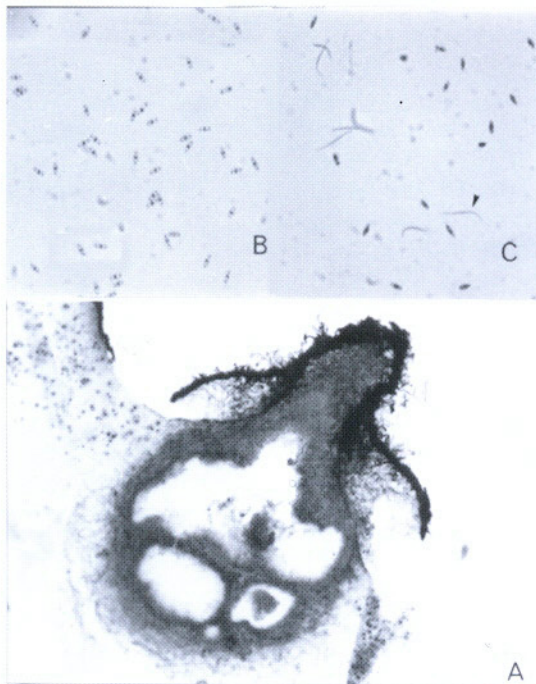
Pathogenicity tests were positive. Only plants inoculated with the fungus showed typical stem canker symptoms (cracking and gum exudation) after 30 to 40 days. The pathogen was reisolated from experimentally infected plants and pathogenicity established according to the requirements of Kock's postulates. The morphological characteristics of the pathogen are as follows:



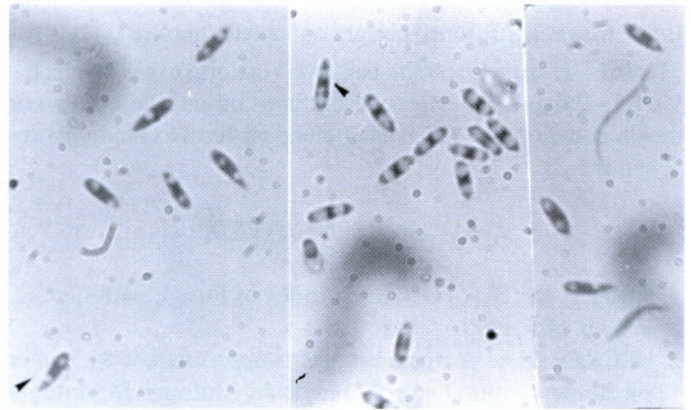
*Phomopsis urenae* Punithalingam, Freire & Poltronieri sp. nov.  
(Status Anamorphosis)  
Figs. 1 – 3.



**Figure 1.** Preparations of pycnidial conidioma and conidia of *Phomopsis urenae* Punithalingam et al., from culture grown on oat-agar. Vertical section of complex, multilocular and prominently rostrate, setose pycnidial conidioma with conidiophores arising from cells lining the convoluted pycnidial cavities stained with lactofuchsin (x145).



**Figure 2.** A- Vertical section of multilocular pycnidial conidioma stained with lactofuchsin (x145); B- conidia with a large guttule at each end; C-  $\alpha$ -conidia and hamate  $\beta$ -conidia (arrowed). B and C conidia stained with lactophenol cotton blue (x575).



**Figure 3.**  $\alpha$ -conidia,  $\beta$ -conidia and k-conidia (arrowed) stained with lactophenol cotton blue (x1500).

Conidiomatibus pycnidiiis in agar atro-brunneis vel atris, subglobosis vel obpyriformibus vel lageniformibus vel variabilibus, 400 – 620  $\mu$ m basi crassis, unilocularibus, saepe aggregatis, complexis, rostratis, setosis, plerumque 600 – 750 mm, usque 2.5mm altis; picnidii pariete polystromatico usque 60  $\mu$ m crasso. Conidiophoris hyalinis, simplicibus vel basi ramosis. Cellulis conidiogenis hyalinis in conidiophoris vel in cellulis picnidii cavitare. Conidiis hyalinis trimorphis: conidiis fusiformibus, unicellularibus, guttulatis, (5-) 6.0 – 7.5 (-8) x 1.5 – 2.0  $\mu$ m; vel conidiis filiformibus rectis vel hamatis, (12-) 15 – 21 x 0.7 – 1.0  $\mu$ m; vel conidiis anguste fusiformibus vel obclavatis, 8 – 9 x 1.5 – 2.0  $\mu$ m, guttulatis. Paraphisisibus vel sterilibus conidiophoris dispersis in fertilibus conidiophoris.

Habitat: in caulibus vivis *Urenae lobatae*, Capitão Poço, Pará, Brasília ( Lat. 1° 46' South , Lat. 47° 4' WGR, Alt. 73 m, 230 km from Belém city), November 1999, Luiz S. Poltronieri, IMI 34 3601.

#### *Pycnidial state (Anamorphic state)*

Colonies on oat-agar exposed to near UV, floccose, white to greyish white with abundant aerial hyphae and black sheets of hyphae on the surface of agar with numerous pycnidial conidiomata; reverse light brown to black. *Mycelium* composed of two types of hyphae, thin-walled, hyaline aerial hyphae and chestnut brown thick-walled hyphae spreading on the surface of the colony on agar. *Conidiomata* pycnidial, partially immersed in the agar, dark brown to black, subglobose to obpyriform or lageniform or variable, 400 – 620 mm wide at the base, unilocular, often aggregated, complex, rostrate, with 1 to several hairy (setose) prominent dark brown necks covered with loose hyphae, usually 600 – 750 mm high and in older cultures reaching up to 2.5 mm in length and opening by apical ostioles. Pycnidial wall up to 60  $\mu$ m thick, composed of many layers of pseudoparenchymatous cells, the outer layers thick-walled brown, the inner layers yellowish brown to hyaline towards the pycnidial cavity. *Conidiophores* hyaline, simple or branched at the base arising from the innermost layers of cell lining the smooth or convoluted pycnidial cavity. *Conidiogenous cells* hyaline, borne on conidiophores or arising directly from cells lining the pycnidial cavity, 8 – 16 x 1.5 – 2.0  $\mu$ m, phialidic. *Conidia* hyaline, trimorphic. *a-conidia* fusiform, unicellular, not constricted in the middle, with a guttule at each end, (5-) 6.0 – 7.5 (-8) x 1.5 – 2.0

$\mu\text{m}$ . b-*conidia* filiform, straight or hamate (hooked), (12-) 15 – 21 x 0.7 – 1.0  $\mu\text{m}$ . k-*conidia* narrowly fusiform to obclavate, 8 – 9 x 1.5 – 2.0  $\mu\text{m}$ , guttulate (with oil drops inside). *Paraphyses* or sterile conidiophores dispersed amongst fertile conidiophores (Figures 1-3).

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