

**SHORT NOTE - *Cylindrocladium spathiphylli*, a causal agent of root and crown rot of *Spathiphyllum wallisii* in Buenos Aires, Argentina**

(With 5 Figures)

***Cylindrocladium spathiphylli*, agente causal de la podredumbre de raíz y corona de *Spathiphyllum wallisii*, en Buenos Aires, Argentina**

(Con 5 figuras)

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**Abstract.** A new disease of *Spathiphyllum wallisii* plants, characterized by leaf yellowing and wilting due to root and crown rot, was observed in nurseries of the Great Buenos Aires, Argentina. A fungus was consistently isolated from diseased tissue and identified as *Cylindrocladium spathiphylli*, on the base of its morphological and cultural characteristics. Inoculation tests were carried out which confirmed this fungus as the causal agent of the disease. This is the first report of *C. spathiphylli* causing root and crown rot of *S. wallisii* in Buenos Aires.

**Key words:** *Spathiphyllum wallisii*, *Cylindrocladium spathiphylli*, root and crown rot.

**Resumen.** Una nueva enfermedad de espatifilo (*Spathiphyllum wallisii*) apareció en viveros del Gran Buenos Aires, Argentina. Esta se caracteriza por síntomas de amarillamiento y marchitamiento foliar debido a la podredumbre del cuello y descortezamiento de raíces. Un hongo aislado del tejido afectado fue identificado como *Cylindrocladium spathiphylli*, sobre la base de sus características culturales y morfológicas. Las pruebas de inoculación lleva-

das a cabo con el hongo aislado confirmaron que éste es el agente causal de la enfermedad. Este es el primer registro sobre la presencia de este patógeno afectando a plantas de *S. wallisii* en Buenos Aires.

**Palabras clave:** *Spathiphyllum wallisii*, *Cylindrocladium spathiphylli*, podredumbre de raíz y corona.

*Spathiphyllum wallisii* Regel (Araceae) is a popular pot plant, native to South America (Parodi & Dimitri, 1978). A new disease appeared in the Great Buenos Aires which severely limits *Spathiphyllum* production. Diseased plants, received in June 2005 from local nurseries, showed yellowing of lower leaves and wilting due to a root rot, which later killed most of the diseased plants (Fig. 1a). Such plants could be easily removed from the pots because of the destruction of the root system. A few elliptical brown spots could be observed on leaves (Fig. 1b). Routine phytopathological tests were performed to determine the causal agent of this disease.

**Fig. 1.** *Spathiphyllum wallisii* plants showed symptoms caused by *Cylindrocladium spathiphylli* a) yellowing of lower leaves and wilting, b) elliptical brown spots on leaves.

**Fig. 1.** Plantas de *Spathiphyllum wallisii* mostraron síntomas causados por *Cylindrocladium spathiphylli* a) amarillamiento y marchitez de las hojas inferiores, b) sectores marrones elípticos sobre las hojas.



**Fig. 1a.**



**Fig. 1b.**

Small pieces (3-4 mm diameter) of diseased leaf, crown and root tissue were surface disinfected by immersion in a solution of 2% sodium hypochlorite for 2 min and then rinsed several times in sterile distilled water. They were then placed on 2% potato dextrose agar (PDA), acidified to pH 6.5, in Petri dishes which were incubated in the dark at  $22 \pm 2$  °C for 48 h. Later on, they were subjected to a 12 h photoperiod (near ultraviolet light- Philips tubes TL 40/08), at the same temperature.

The same fungus was consistently isolated from the diseased plant tissues. After 48 h of incubation, fungal growth was observed forming a white cottony mycelium, which later turned red-brown and produced a dark reddish brown pigmentation after one week (Fig. 2). Microscopic observations revealed septate hyphae and hyaline conidiophores which branched dichotomously, with two to four cylindrical phialides. Sterile filaments ended in a globose hyaline vesicle typical of the genus *Cylindrocladium* (Fig. 3). Cylindrical, straight, hyaline conidia of  $62$  ( $45.5 - 78.7$ )  $\times$   $6$  ( $4.7 - 7.2$ )  $\mu\text{m}$ , rounded at both extremes and usually having one-septate, were formed singly at the phialide tips (Figs. 4, 5). Reddish brown chlamydospores occurred in clusters and formed soft microsclerotia in culture media. Based on these morphological and micrometric characteristics, the fungus

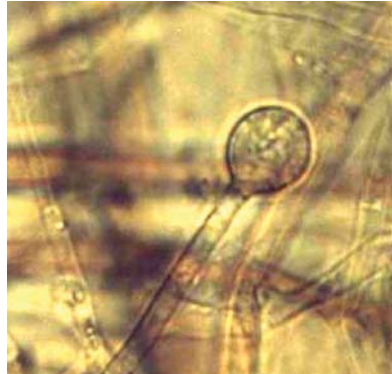
**Fig. 2.** *Cylindrocladium spathiphylli* red-brown mycelium developed in Petri dishes.

**Fig. 2.** Micelio rojo-marrón de *Cylindrocladium spathiphylli* desarrollado en cajas de Petri.



**Fig. 3.** Globose hyaline vesicle (400 X).

**Fig. 3.** *Vesícula hialina globosa (400 X)*



**Fig. 4.** Cylindrical, hyaline and straight conidia of *Cylindrocladium spathiphylli* (400 X).

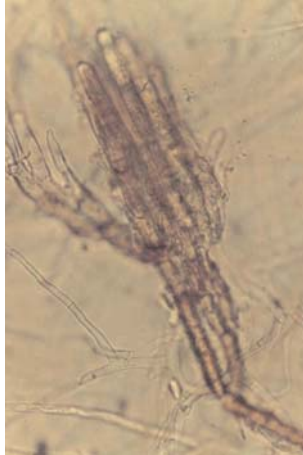
**Fig. 4.** *Conidios cilíndricos, hialinos y rectos de Cylindrocladium spathiphylli (400 X).*



was identified as *Cylindrocladium spathiphylli* Schoulties, El-Gholl & Alfieri (Schoulties et al., 1982). The corresponding teleomorph (*Calonectria spathiphylli* El-Gholl, Uchida, Alfenas, Schub, Alfieri & Chase) was not observed. The isolate was deposited in the culture collection of the Facultad de Agronomía, Buenos Aires, Argentina.

**Fig. 5.** Conidiophores which branched dichotomously at their extremes in cylindrical phialides and conidia (400 X).

**Fig. 5.** Conidioforos que se ramificaron dicotómicamente en su extremo en fiálides y conidios (400X).



Stem bases and roots of five healthy *Spathiphyllum* plants were inoculated with a spore suspension obtained from a 10-day-old culture grown on PDA and adjusted to  $10^4$  conidia/ml. Inoculated plants were covered with plastic bags to maintain high relative humidity and placed in a growth chamber at  $22\text{ }^\circ\text{C} \pm 2\text{ }^\circ\text{C}$  during 10 days; thereafter, they were kept in the greenhouse. Control plants were inoculated only with sterile, distilled water. After 15 days, the inoculated plants showed similar symptoms as the spontaneously diseased plants. Control plants remained without symptoms. Koch's postulates were fulfilled by reisolating the same fungus from the inoculated plants. It was concluded that *C. spathiphylli* is the causal agent of root and crown rot of *S. wallisii*.

A *Cylindrocladium*, isolated from diseased plants of *Spathiphyllum* sp., was originally identified as *C. floridanum* (Schoulties & El-Gholl, 1980), but later Schoulties et al. (1982) described it as a new species, *C. spathiphylli*. Recently, *C. spathiphylli* was found in the Federal District, Brazil (Reis et

al., 2004). Colombo et al. (2005) have reported the presence of *C. spathiphylli* in a nursery in Corrientes (Argentina), but no morphological or pathogenicity studies were carried out. Thus, the present is the first description of *C. spathiphylli* in Argentina and the first report of this fungus causing disease on *S. wallisii* in Buenos Aires.

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