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First report of stem canker affecting *Amaranthus caudatus* in Argentina

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Abstract. *Pythium aphanidermatum* was recorded as the causal agent of stem canker in a mature plant of *Amaranthus caudatus* for the first time in Argentina.

Amaranthus caudatus is grown as an alternative crop in semi-arid regions of Argentina where the traditional crops cannot prosper. It is used for both human and animal consumption because of the high quantity and quality of proteins produced. In 2003, in the south of Buenos Aires province, Argentina, a single plant of *A. caudatus* showing wilt and a 6-cm canker at the base of the stem was observed. Similar symptoms have been reported on cultivated amaranth species (*A. cruentus*, *A. hypochondriacus*) and crosses of *A. hypochondriacus* × *A. caudatus* × break *A. hybridus*; *A. hypochondriacus* × *A. cruentus* × *A. hybridus*; *A. hypochondriacus* × *A. hybridus* and *A. hypochondriacus* × *A. hybridus*, in which *Pythium aphanidermatum* was identified as the causal agent (Mihail and Champaco 1993).

During an initial examination of the canker, pith disintegration was observed. Segments of the symptomatic tissue were washed, surface disinfected with a 1% sodium hypochlorite solution, rinsed twice in sterile water, blotted dry with sterile paper and plated into Petri dishes with potato dextrose agar (PDA, 2%) or cornmeal agar (CMA, 17 g/L) amended with streptomycin sulfate (250 mg/L). Plates were incubated for two days (16 h photoperiod and 25 ± 2°C), after which a colony similar to *Pythium* was transferred to CMA to determine its cultural characteristics.

After 7 days' incubation, a fast growing cottony colony developed with coenocytic mycelium; lobate sporangia, oogonia 20.65-µm diameter; aplerotic smooth walled oospores, 19.5-µm diameter; and one or two antheridia of 14-µm length and 10-µm width. The isolate was identified as *Pythium aphanidermatum* (Edson) Fitzp. (Frezzi 1956)

To confirm the pathogenicity of the isolates, ten potted plants of each cultivated amaranth species (*A. mantegazzianus*, *A. hypochondriacus* and *A. caudatus*) were wounded. The wound was made on the stems near the soil line. Half of the plants were inoculated by putting a 5-mm diameter fungus-colonised plug of PDA (2%) onto the previously wounded stem. The plugs had been colonised for 7 days before the inoculation. The rest of the plants were kept as controls and were inoculated with non-colonised plugs of PDA (2%). After the inoculation, the plants were sprayed with distilled water and placed in a moist chamber for 72 h and the inoculated area of each plant was covered with a film in order to avoid dehydration.

The pathogenicity tests were able to reproduce the symptoms observed in the field. Eight days after the inoculation with *P. aphanidermatum*, all plants developed cankers that ranged between 1.5 and 2.2 cm long. The pathogen was then reisolated from the cankers in the inoculated plants fulfilling Koch's postulates. The control plants remained symptomless.

In areas with both high temperatures and soil water saturation, stem canker disease of amaranth can limit crop production (Mihail and Champaco 1993). In 2003, the disease development coincided with environmental conditions of high temperature and high humidity, which was unusual for this area.

One strain of *P. aphanidermatum*, isolated from *A. caudatus* in this work, has been deposited in the collection of the Dr E. Hirschhorn of the Instituto Fitotécnico de Santa Catalina (Facultad de Ciencias Agrarias y Forestales de la Universidad Nacional de La Plata).

This is the first report of *P. aphanidermatum* as the causal agent of stem canker in *A. caudatus* in Argentina.

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