

## Diseases Caused by Oomycetes

### First Report of *Phytophthora oedocheilum* Causing Root Rot on *Coreopsis lanceolata* in Italy

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*Coreopsis lanceolata*, common name lance-leaved coreopsis, is a perennial herbaceous plant belonging to the family Compositae, used in beds and mixed borders, where it flowers for a long period. During the summer of 2020, twenty-five 5-month-old potted plants of *C. lanceolata* growing in a private garden located near Campiglia Cervo (Biella province, northern Italy) showed stunted growth and general decay. Leaves of affected plants yellowed, collapsed, and dried. Stunted roots exhibited symptoms of rot. The most affected plants died. Affected roots were washed thoroughly, surface sterilized for 30 s in a 1% NaOCl solution, and then rinsed with sterile water. Small fragments (about 2 mm<sup>2</sup>) were excised from the margins of affected root tissues and plated on the selective medium for oomycetes (PDA-BNPRA-HMI) described by Masago et al. (1977). A *Pythium*-like organism was consistently isolated and transferred to corn meal agar (CMA). Then, several whitish mycelial disks (10 mm in diameter) of isolate 20-29-4 were taken from colonies grown on CMA and floated on water with soil extract (Erwin and Ribeiro 1996) contained in Petri plates. Plates were maintained at room temperature. After 8 days, hyphae 2.8 to 4.8 (average 3.6) µm in width produced subglobose to pyriform sporangia, measuring 17.0 to 27.0 × 20.6 to 59.3 (average 22.4 × 36.7) µm. Oospores were not observed. The DNA of the isolate 20-29-4 was extracted using the l'E.Z.N.A. Fungal DNA Mini Kit (Omega Bio-Tek, Darmstadt, Germany). The internal transcribed spacer

(ITS) region of rDNA was amplified using the primers ITS1/ITS4 (White et al. 1990) and sequenced. BLAST analysis of the 811 bp segment (GenBank accession no. MZ144196) showed a 100% identity with the ex-type CBS 292.37 of *Phytophthora oedocheilum* (GenBank accession no. AY598664). Pathogenicity tests were performed on three healthy plants of *C. lanceolata* using the isolate 20-29-4. The inoculum was obtained by growing the isolate on a mixture of wheat and hemp kernels (2:1) for 15 days. Infested kernels were mixed (4 g/liter) into a steam disinfested substrate consisting of a mix of sphagnum peat/pomix/pine bark/clay (50:20:20:10) in which *C. lanceolata* plants were transplanted. Three control plants were transplanted into a steam disinfested soil treated with uninoculated kernels (4 g/liter). All plants were maintained in a greenhouse at temperatures ranging from 16 to 26°C. In the months following inoculation, plants showed stunting and a general decay. Three months after inoculation, a microorganism with the morphological characteristics of *P. oedocheilum* was constantly reisolated from stunted roots. Controls remained symptomless. *P. oedocheilum* has been reported on a small number of hosts in which the *Coreopsis* genus is not included (Farr and Rossman 2021). This is the first report of *P. oedocheilum* on *C. lanceolata* in Italy as well as worldwide. The economic consequences of this disease are currently limited. However, since the use of *C. lanceolata* is becoming popular, this disease may discourage gardeners and commercial growers from suggesting this ornamental plant in gardens and landscaping.

#### References:

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