



First report of *Fusarium oxysporum* f. sp. *carthami* infecting *Euphorbia lathyris*

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Received: 18 December 2018 / Accepted: 30 March 2019
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Keywords Actin · Beta-tubulin · Biofuel · *Fusarium* · ITS

Euphorbia lathyris L. is a weedy plant producing latex mainly utilized as ornamental plant or as energy crop for diesel fuels (Castelblanque et al. 2016). In spring 2016, symptoms of Fusarium wilt (FW) on *E. lathyris* (disease incidence >50%) were observed in an experimental plot located in Basilicata Region (Southern Italy, 40° 12' N, 16° 40' E). Yellowing and, subsequently, browning and wilting were observed on leaves. A brown discoloration of the vascular bundles was observed on stems and many plants were dead. In order to isolate the likely pathogen, small pieces of symptomatic tissues were surface-disinfected in 70% ethanol (30 s), 3% sodium hypochlorite (5 min), rinsed in sterile water for three times, dried under aseptic conditions and then placed in Petri dishes containing Potato Dextrose Agar (PDA). *Fusarium oxysporum* Schltdl. (Fo) was always isolated. On PDA the Fo pure culture mycelium was white with a purple shade in the center. Microconidia (10.5–14 × 2.5–3.6 µm) were hyaline, aseptate to 1-septate and slightly curved. Macroconidia (23–34 × 3.5–4.8 µm) were also hyaline, 3–5 septate, slightly curved or straight with pointed ends. Chlamydospores (average diameter 10 µm) were smooth and formed single or occasionally in chains. Genomic DNA was extracted from monospore pure fungal cultures for further pathogen identification at *forma specialis* level. PCR amplifications, sequencing and sequence analysis of three genes, Internal Transcribed Spacer (ITS), β-tubulin (tub-2) and actin (ACT), were performed employing the primers pairs ITS5/ITS4, Bt2a/Bt2b and ACT-512F/ACT-783R, respectively. Molecular investigations showed that Fo isolates from *E. lathyris* belonged to *Fusarium oxysporum* f.

sp. *carthami* Klis. & Houston (Foc) (Klisiewicz and Houston 1963). Eighteen nucleotide sequences were deposited into EMBL-EBI database under the following accession numbers: LT972211-LT972214, LS991011, LS991012 (ITS), LR025143-LR025148 (tub-2); LR131910-LR131915 (ACT). These sequences showed 100% identity with Foc isolates already present in GenBank (MG571600, MG571601 and MG571602). Phylogenetic analyses based on nucleotide sequence of rDNA gene (ITS) revealed that isolates from *E. lathyris* clustered together with other Foc isolates of different origin. Pathogenicity assays were performed on *E. lathyris* by inoculation of 10 potted seedlings (45-day-old) with 20 ml/pot of conidial suspension (1 × 10⁶ conidia/ml) using a sterile syringe to fulfill Koch's postulates. Inoculated plants were maintained in a greenhouse under 24 ± 2 °C, 70% humidity and 17 h photoperiod. Ten untreated plants served as controls. FW symptoms appeared 20 days post-inoculation and Fo was always re-isolated and molecularly identified as Foc. Control plants were symptomless. *Fusarium oxysporum* f. sp. *carthami* was currently reported only on *Carthamus tinctorius* L. in California and India (Farr and Rossman 2019). To the best of our knowledge, this is the first report of this pathogen on *E. lathyris* in the world.

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