

Title First report of *Fusarium torulosum* causing dry rot of seed potato tubers in the United States
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Abstract

Fusarium dry rot of potato (*Solanum tuberosum* L.) is a postharvest disease caused by several *Fusarium* species and is of worldwide importance. Thirteen species of *Fusarium* have been implicated in fungal dry rots of potatoes worldwide. Among them, eight species have been reported in the northern United States (2). In Michigan potato production, *F. sambucinum* was the predominant species reported to be affecting seed potato in storage and causing seed piece decay after planting (3). Some previous identifications of *F. sambucinum* as dry rot may have been *F. torulosum* since *F. torulosum* was previously classified within *F. sambucinum* (4). To further investigate this, dry rot symptomatic tubers were collected from Michigan seed lots in the summers of 2009 and 2010. Small sections from the margins of necrotic regions were cut with a scalpel, surface sterilized in 0.5% sodium hypochlorite for 10 s, rinsed twice in sterile distilled water, and blotted with sterile filter paper. The tissue pieces were plated on half-strength potato dextrose agar (PDA) amended with 0.5 g/liter of streptomycin sulfate and incubated at 23°C for 5 to 7 days. Cultures resembling *Fusarium* species were transferred onto water agar, and single hyphal tips from actively growing isolates were removed and plated either on carnation leaf agar (CLA) or on half-strength PDA to generate pure cultures. Among the *Fusarium* isolates obtained, five isolates were identified as *F. torulosum* (GenBank Accessions Nos. JF803658–JF803660). Identification was based on colony and conidial morphology on PDA and CLA, respectively. These features included slow growth (2.8 ± 0.2 cm in 5 days), white mycelium that became pigmented with age, narrow concentric rings, red or white pigmentation on agar, macroconidia (32.4 ± 0.4 μ m average length) with five septa, a pointed apical cell, and a foot-shaped basal cell (4). The identity was confirmed through DNA extraction followed by amplification and sequencing of the translation elongation factor (EF-1 α) gene region (1). The Fusarium-ID.v (1) and the NCBI database were used to obtain the closest match (99%) to previously sequenced materials (GenBank Accession No. AJ543611). Pathogenicity testing was done on disease-free potato tubers cv. Red Norland. Tubers were surface sterilized for 10 min in 0.5% sodium hypochlorite and rinsed twice in distilled water. Three tubers per isolate were injected with 20 μ l of a

conidial suspension (10^6 conidia/ml) made from *F. torulosum* cultures grown on PDA for 7 to 10 days. Control tubers were injected with 20 μ l of sterile distilled water. All tubers inoculated with *F. torulosum* developed typical potato dry rot symptoms consisting of a brown and dry decay. There was no disease incidence on the control tubers. *F. torulosum* was reisolated from the symptomatic tubers. To our knowledge, this is the first report of *F. torulosum* causing potato dry rot in the United States.