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DISEASE NOTES



# First Report of *Fusarium tricinctum* Causing Rot of Garlic Bulbs in Serbia

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Garlic (*Allium sativum* L.) is widely cultivated in Serbia, covering more than 7,000 ha, mostly concentrated in the northern part of country, Vojvodina Province. During 2016, infected garlic bulbs occurred in storage and warehouses in several localities of Vojvodina Province. Garlic bulbs and cloves were softened, spongy, or sunken, and covered with white, light pink, or reddish fungal growth (mycelium). Fifty samples of symptomatic garlic bulbs were taken, surface disinfested in 1% NaOCl for 2 to 3 min, followed by three serial washings of sterilized distilled water and dried under aseptic conditions. Pieces (3 to 4 mm) excised from clove tissue were transferred on potato dextrose agar (PDA) and incubated for 7 days at 25°C in the dark. After 7 days, all isolates were examined morphologically and the fungal isolate was cleaned up by subculturing successively and selected by single-spore isolation. A pathogenicity test was conducted with 21 *Fusarium* isolates by inoculation of five garlic cloves cv. Bosut, previously sterilized in 0.5% NaOCl for 60 s, rinsed four times in sterilized distilled water, and wounded to a depth of 4 mm (Palmero et al. 2012). The five wounded cloves were inoculated with each fungal isolate and incubated in a growth chamber at 25°C until symptoms of rot appeared. All isolates were reisolated from artificially inoculated garlic

cloves, completing Koch's postulates. Colony morphology was recorded from cultures grown on PDA and carnation leaf agar (CLA) (Castañares et al. 2011; Leslie and Summerell 2006). One isolate, when grown on PDA, rapidly produced abundant, dense, white, aerial mycelium that became pink with age and formed red pigments in the medium. On CLA, macroconidia were abundant, relatively slender, curved to lunate, and three to five septate. Microconidia were abundant, napiform, oval or pyriform, zero to one septate, and commonly clustered in false heads. Chlamydospores were absent. On the basis of fungal morphology, the fungus was identified as *Fusarium tricinctum* (Corda) Saccardo (Gerlach and Nirenberg 1982). To confirm the morphological identification, total genomic DNA was extracted from the mycelium of the 21 isolates with a DNeasy Plant Mini Kit (Qiagen, Hilden, Germany). Following DNA extraction, the translation elongation factor 1-alpha region was amplified by PCR with the primer pair EF1 and EF2 (Geiser et al. 2004). The sequences were compared with those in GenBank. The TEF sequence (accession no. KX611146) showed 100% similarity with several *F. tricinctum* sequences (e.g., HM068307, EU744838, and EU744837). Based on the completion of Koch's postulates and sequence analysis, to our knowledge, this is the first report of *F. tricinctum* causing pink rot of garlic bulbs in Serbia. This species is known to produce mycotoxins severe for human health and monitoring of storage garlic in Serbia is continued.



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