

First Report of *Fusarium redolens* Causing Crown Rot of Wheat (*Triticum* spp.) in Turkey

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*Fusarium* crown rot, caused by a complex of *Fusarium* spp., is a yield-limiting disease of wheat world-wide, especially in dry Mediterranean climates. In order to identify *Fusarium* species associated with crown rot of wheat, a survey was conducted in summer 2013 in the major wheat growing regions of Turkey, including the Central and South East Anatolia, Black Sea, and Aegean. Crown and stem base pieces from bread wheat (*Triticum aestivum* L.) and durum wheat (*Triticum durum* Desf.) showing symptoms of discoloration were surface disinfested in 1% sodium hypochlorite solution for 3 min., rinsed three times in sterile distilled water, dried on sterile filter paper, and cultured on peptone PCNB agar (Leslie and Summerell, 2006). Growing colonies were transferred to Synthetischer Nährstoffarmer Agar (Leslie and Summerell, 2006) for sporulation. Single spores were isolated in sterile distilled water and transferred to water agar for single spore isolation. Monosporic cultures were identified as *Fusarium redolens* Wollenw. by morphology (Leslie and Summerell, 2006) and by sequencing the translation elongation factor -1 alpha (TEF-1 $\alpha$ ) gene region using ef1 (5'-ATGGGTAAGGARGACAAGAC-3') and ef2 (5'-GGARGTACCAGTSATCATG-3') primers (O'Donnell et al. 1998). BLAST analysis with the NCBI GenBank database was performed on the TEF gene sequences (approximately 650 bp) for all isolates. Nineteen isolates resulted in matches of 99% and 100% respectively to the *F. redolens* accessions GU250584 and HQ731063. These isolates were tested for pathogenicity on the susceptible durum wheat variety (Kiziltan). Plastic tubes (2.5 cm in diam X 16 cm in height) were filled with a mixture of sterile sand, soil, and peat (50:40:10, v:v). A PDA plug (1-cm diam.) was taken from the margin of a 7-day-old culture and placed in the tube. A single pre-germinated seed was placed on the PDA plug and covered with planting medium. A sterile agar plug was used as a non-inoculated control. Each treatment (isolates and control) had three replicates, and the experiment was repeated to confirm the results. Nine weeks after inoculation, plants were washed and checked for disease symptoms on both the crown and the stem base. Rating for disease severity was performed using a 1-5 scale (1: 1-9%, 2: 10-29%, 3: 30-69%, 4: 70-89%, 5: 90-99%) modified from Wildermuth and McNamara (1994) and results were analysed with ANOVA. Disease ratings ranged from 1 to 3 with an average of 1.7. Three of the isolates caused ratings significantly greater than the control (avg=3,3 and 2.7). Necrosis and brown discoloration was observed on the lower stems of these treated plants, while control treatments showed no symptoms. Fungi were re-isolated from crowns of inoculated plants and control plants and confirmed to be *F. redolens* based on morphology. *Fusarium redolens* has been reported to cause crown rot on durum wheat in Saskatchewan, Canada (Taheri et al. 2011), *Fusarium* yellows on chickpea (*Cicer arietinum* L.) in Spain (Jimenez-Fernandez et al. 2011), and rot of onions (*Allium cepa* L.) in Turkey. This report confirms *F. redolens* as causal agent of crown rot of wheat in Turkey.

## References

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