**First Report of Crown Rot Caused by* Fusarium algeriense* on Wheat in Azerbaijan**

**G. Özer, M. İmren,** Department of Plant Protection, Faculty of Agriculture and Natural Sciences, Bolu Abant Izzet Baysal University, Bolu 14030, Turkey; **T. C. Paulitz,** the United States Department of Agriculture, Agricultural Research Service, Wheat Health, Genetics, and Quality Research Unit, Washington State University, Pullman, WA 99164-6430, USA; **H. Bayraktar,** Department of Plant Protection, Faculty of Agriculture, Ankara University, Ankara, 06110, Turkey; **H. Mumijnanov,** Food and Agriculture Organization of the United Nations, Plant Production and Protection Officer, Ankara, Turkey and; **A. A. Dababat,** International Maize and Wheat Improvement Centre (CIMMYT), P.O. Box. 39 Emek, Ankara, Turkey.

*Fusarium algeriense* Laraba & O'Donnell has been recently described as a novel crown rot pathogen of wheat within *F. burgessii* species complex (Laraba et al. 2017). To our knowledge; there are no reports of the existence of this pathogen outside of Algeria. In June 2017, 14 fields in Ismailli and Oguz provinces, Azerbaijan were surveyed. Diseased wheat plants exhibiting symptoms of crown rot including brown discoloration on the first two or three internodes of the stem were collected before maturity, at maturity and/or after harvest. To identify the pathogen, symptomatic crown and stem base tissues were rinsed with tap water, surface disinfested in 1% NaClO solution for 2 min, and then rinsed with sterile distilled water, and air dried. The sections (1 cm) of symptomatic tissues were placed on 1/5 strength potato dextrose agar (PDA) and incubated in the dark at 20°C for 5 days. Pure isolates which possessed typical morphology of *Fusarium* were grown on PDA and Spezieller-Nährstoffarmer Agar (SNA) (Leslie and Summerell 2006). The primers ITS1/ITS4 (White et al. 1990), EF1/EF2 (O'Donnell et al. 1998), and F5/R8 (O'Donnell et al. 2010) were used to amplify and sequence portions of the internal transcribed spacer (ITS), translation elongation factor 1α (*EF-1α*), and the largest subunit of RNA polymerase (*RPB1*) loci of two representative isolates. A BLAST search of the sequences showed 100% identity with ITS (MF120481), *EF-1α* (MF120514), and *RPB1* (MF120492) sequences of *F. algeriense* strain NRRL 66651. The sequences of the two isolates generated during the present study were deposited in GenBank under accession nos. MN172530-31 (ITS), MN173814-15 (*EF-1α*), and MN173816-17 (*RPB1*), respectively. Colony color of the isolates on PDA varied from yellowish-white to brownish-gray. Chlamydospores were absent. Ellipsoidal microconidia were produced on aerial monophialides, usually aseptate and measured 7.46±1.06 x 2.75±0.34 μm (*n*=50). Straight to slightly curved macroconidia with curved apical and distinct basal foot cell measuring 30.86±2.72 x 4.43±0.42 μm (*n*=50) mostly 3-septate were formed generally on monophialides on SNA surface. As a result, out of the 59 *Fusarium* spp. isolates, four isolates from two fields (one for each province) were identified as *F. algeriense*. To assess their pathogenicity on wheat, five germinated seeds of the susceptible cv. Seri 82 to other *Fusarium* spp. were placed in a 9 cm diameter pot filled with a sterile mixture substrate containing equal volumes of peat, vermiculite, and soil. Approximately 1-cm diameter mycelial plugs from cultures of each
isolate were placed in contact with the seeds. Seeds inoculated with sterile agar plugs were used to serve as control. The seeds were covered with the same mixture substrate and then the pots were transferred to a growth chamber of 23±2°C and 14-h photoperiod. The experiment was conducted twice with five replicate pots per isolate. Four weeks post-inoculation, discoloration of the crown was observed on the inoculated plants, while no symptoms were observed on the control plants. Koch’s postulates were fulfilled by reisolating and identifying the pathogen based on morphology described above. This is the first report of *F. algeriense* causing crown rot of wheat in Azerbaijan. Azerbaijan is the second country after Algeria in which the pathogen was detected. Although all Algerian isolates were obtained from durum wheat, isolates in this study were isolated from bread wheat. Further investigation is needed to understand its potential distribution and impact on wheat crops.

**References:**


Corresponding authors:

Göksel ÖZER

ORCID identifier is 0000-0002-3385-2520

E-mail: gokozer@gmail.com

Abdelfattah. A. Dababat

ORCID identifier is 0000-0002-3172-0452

E-mail: a.dababat@cgiar.org
Figure captions

eXtra Fig. 1. Neighbor joining tree of *Fusarium* spp. isolates based on combined sequences of ITS, *EF-1α*, and *RPB1* loci. Numbers on the branches represent bootstrap values obtained from 1000 bootstrap replications.

eXtra Fig. 2. Crown rot symptoms caused by *Fusarium algeriense* on wheat seedling

eXtra Fig. 3. Macro and microconidia of *Fusarium algeriense* (a: 630x, b: 400x magnification)

eXtra Fig. 4. Monophialides of *Fusarium algeriense* (a & b: 400x, c: 630x magnification)

eXtra Fig. 5. Colony morphology of *Fusarium algeriense* after 7 d of growth on PDA in dark.