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DISEASE NOTES

First Report of the Ug99 Race Group of Wheat Stem Rust, *Puccinia graminis* f. sp. *tritici*, in Egypt in 2014

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ABSTRACT

Since the first detection of race TTKSK (Ug99) of *Puccinia graminis* f. sp. *tritici* in Uganda in 1998 (Pretorius et al. 2000), it has been a priority to track its further spread to other wheat growing areas. To date, 10 variants in the Ug99 race group have been detected in 12 countries, i.e., Uganda, Kenya, Ethiopia, Sudan, Tanzania, Eritrea, Rwanda, South Africa, Zimbabwe, Mozambique, Yemen, and Iran (Patpour et al. 2015). In the 2014 crop season, the presence of virulence to *Sr31* in Egypt was suspected based on preliminary field observations of high infection on sources of *Sr31* planted as international stem rust trap nursery at i) Sakha Agricultural Research Station in Kafrelsheikh (31.094059° N, 30.933899° E), ii) Al-Sharqia (30.601400° N, 31.510383° E), and iii) Nubaria (30.91464° N, 29.95543° E). At Sakha, wheat cv. PBW343 (carrying *Sr31*) was scored 30MS-S, and the monogenic line Benno Sr31/6*LMPG was scored 20MS-S at Al-Sharqia. Three samples from each of these lines were sent to the Global Rust Reference Center (GRRC, Denmark). At Nubaria, stem rust was observed on wheat cvs. Misr-1, Misr-2, Giza 168, and Giza 171, and infected samples were collected and sent under permit to the Foreign Disease-Weed Science Research Unit (Fort Detrick, MD). Urediniospores of each sample were recovered on susceptible wheat cv. Morocco and McNair 701. Twenty-three and 11 single pustule isolates were derived and analyzed at GRRC and USDA-ARS Cereals Disease Laboratory, respectively, using 20 North

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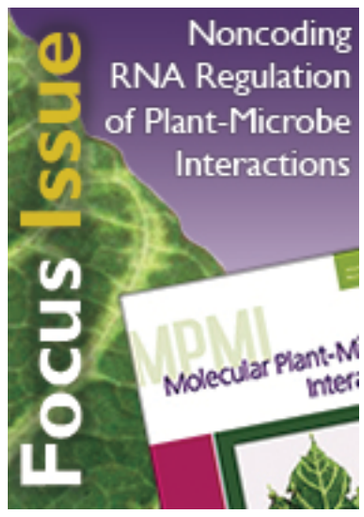

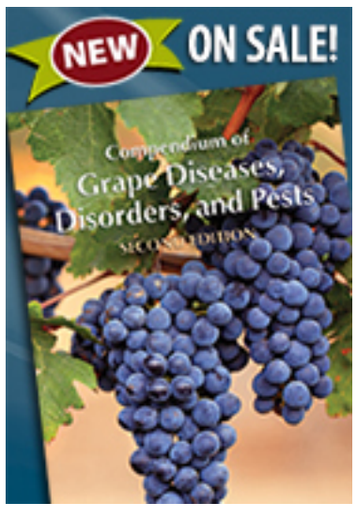

American stem rust differential lines following standard race-typing procedure and infection type (IT) criteria determining virulence and avirulence (Jin et al. 2008). In addition, three supplemental tester lines of Siouxland (carrying *Sr24+Sr31*), Sisson (carrying *Sr31+Sr36*), and Triumph 64 (donor of *SrTmp*) were included to confirm virulence/avirulence to *Sr24*, *Sr31*, *Sr36*, and *SrTmp.* The experiments were repeated two to three times. Three races in the Ug99 race group were detected; TTKST (four isolates, IT 3+4 for *Sr24*, *Sr31*, and cv. Siouxland) from Al-Sharqia, TTKTK (13 isolates, IT 4 for *Sr31*, *SrTmp*, and cv. Triumph 64) from Sakha, and TTKSK (2 isolates, IT 4 for *Sr31*) from Nubaria. This is the first confirmation of races in the Ug99 race group in Egypt, thereby extending the geographical distribution of Ug99-related races. Since Egypt may play a role as green-bridge for *P. graminis* f. sp. *tritici* between East and North African countries and the wheat belts in the Middle East and Mediterranean regions, the rust surveillance efforts should be intensified in affected countries as well as in neighboring regions.

References:

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Pretorius, Z. A., et al. 2000. Plant Dis. 84:203. 10.1094/PDIS.2000.84.2.203B [Abstract]
Jin, Y., et al. 2008. Plant Dis. 92:923. 10.1094/PDIS-92-6-0923 [Abstract] [ISI][ISI]

Citation