First report of *Rhizoctonia solani* AG-2-2-IIIB on sugar beet in Turkey

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During the spring of 2016, 1006 sugar beet samples displaying *Rhizoctonia* root and crown rot (RRCR) symptoms were collected from several fields in Konya, Turkey. Symptoms typically associated with RRCR, including dark brown to black lesions at the base of the petioles or circular to oval, localized, dark lesions at the taproot, were observed on sugar beet plants. The symptomatic tissues were surface-sterilized in 1% NaOCl for 2 min, rinsed in distilled water, air-dried and then transferred on half-strength potato dextrose agar (HSPDA) plates and incubated at 25 °C for 7 days. Pure fungal colonies were brown and dark brown sclerotia were formed on the media. The hyphae had right angled branches and multinucleate cells having 3–8 nuclei per cell. Anastomosis group was determined by using the tester strains of *R. solani* and sequencing the partial internal transcribed spacer (ITS) region of ribosomal DNA (Sneh et al. 1991). Anastomosis of the 34 isolates out of total 100 obtained was observed only with the tester strain of AG-2-2-IIIB. The resulting sequences of representative isolates (MN271684–MN271685) were 98.53–99.41% identical to that of *R. solani* AG-2-2-IIIB strain (AY154311), used by Sharon et al. (2006), in GenBank. These isolates were recorded and deposited in the cultures collection of Ankara University Cultural Collections Museum (accession numbers: AÜZF-1056–1057). To confirm the pathogenicity, a slightly modified soil inoculum layer technique of Brantner and Windels (1998) was used. Typical root and crown rot symptoms appeared on

all inoculated seedlings. No symptoms were observed on control plants. The pathogen was re-isolated from diseased tissues, completing Koch's postulates. To our knowledge, this is the first report of *R. solani* AG-2-2-IIIB causing disease on sugar beet in Turkey.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Research involving human participants and/or animals The authors declare that no human participants and animals were involved in this study.

Informed consent This manuscript is new and not being considered elsewhere. All authors have approved the submission of this manuscript.

References

- Brantner JR, Windels CE (1998) Variability in sensitivity to metalaxyl in vitro, pathogenicity and control of *Pythium* spp. on sugar beet. *Plant Disease* 82:896–899
- Sharon M, Kuminaga S, Hyakumachi M, Sneh B (2006) The advancing identification and classification of *Rhizoctonia* spp. using molecular and biotechnological methods compared with the classical anastomosis grouping. *Mycoscience* 47(6):299–316
- Sneh B, Burpee L, Ogoshi A (1991) Identification of *Rhizoctonia* species. APS Press, St. Paul

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