

Diseases Caused by Fungi and Fungus-Like Organisms

First Report of Multinucleate *Rhizoctonia solani* AG4 HG-I Causing Crown and Root Rot on Strawberry in Italy

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Strawberry (*Fragaria × ananassa* Duch.) is a crop of great economic importance in Italy, where it is grown in soil and under soilless conditions. In March 2019, about 30 to 35% of plants (cv. Portola) grown in a peat substrate under soilless conditions in a farm located in Cuneo Province died. The examination of 10 plants showed crown and root rot over 100% of the root/crown. Affected plants showed brown necrotic tissues in basal leaves and petiole necrosis. Crown and root tissues were cleaned thoroughly from soil residues under tap water. Portions (about 3 to 5 mm) from crowns and roots were cut and surface disinfected with a water solution of NaClO at 0.5% for 2 min and rinsed in sterile water. The tissue fragments were plated on potato dextrose agar (PDA) amended with 100 mg/liter of streptomycin sulfate and incubated at 25°C. After 3 days, fungal colonies with septate hyphae and right-angled branching similar to *Rhizoctonia solani* were observed with high frequency (90%) (Sneh et al. 1991). To confirm the species identity, hyphal tips were transferred from the obtained colonies to PDA and grown for 10 days at 22 ± 1°C. Mycelium was light brown, compact,

with radial growth. The hyphal width varied from 8.5 to 10 µm. Sclerotia were not present. DNA was then extracted from a single representative isolate (RH230), and rDNA ITS sequencing was conducted as described by Aiello et al. (2017). The rDNA ITS sequence of RH230 (GenBank accession no. MZ373271) was 100% identical (603/603 bp) to part of another sequence previously identified as *R. solani* AG4 HG-I (MK583647, Claerbout et al. 2019). Twenty-day-old healthy plants of cultivar Portola were planted in a steam-disinfested peat soil (12-liter pots) infested with 1 g/liter of wheat kernels colonized for 10 days with the isolate RH230 to evaluate the pathogenicity. Control plants were planted in a steam-disinfested peat substrate amended with noninoculated sterilized wheat kernels. Six plants per treatments were used and kept in a greenhouse at 25 ± 3°C. Crown and root rot similar to that observed in the farm developed 40 to 55 days after inoculation and resulted in 50 to 66% dead plants during two repeated trials. Fungal colonies morphologically similar to *R. solani* were consistently reisolated from affected crowns, and the resequencing of the rDNA ITS region fulfilled Koch's postulates. Control plants remained healthy. *Rhizoctonia* isolates of AG-A and AG-G anastomosis groups were found as pathogens of strawberry in Italy (Manici and Bonora 2007), while the AG4 HG-I was reported in Israel (Sharon et al. 2007). *R. solani* AG4 HG-I was found on other hosts (Aiello et al. 2017); however, to our knowledge, this is the first report on strawberry in Italy. The disease could become a significant problem for soilless culture strawberry in Italy, causing severe yield losses.

References:

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