First Report of Asiatic Brown rot (*Monilinia polystroma)* and Brown rot (*Monilinia fructicola*) on Pears in Italy

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Worldwide, brown rot caused by *Monilinia* spp. is an important fruit postharvest decay causing severe losses in stone and pome fruits with a significant economic impact. In Italy three *Monilinia* species *M. laxa*, *M. fructicola* and *M. fructigena* are the causal agents of blossom and twig blight, and brown fruit rot in stone fruit. *M. polystroma* has been observed on peaches in Italy (Martini C. et al. 2014), and has been reported in Czech Republic and Hungary (Petroczy M. et al. 2012), Poland (Poniatowska A. et al. 2013), Serbia (Vasic M. et al. 2013), and Switzerland (Hilber-Bodmer M. et al. 2012) on pome fruits and apricots. In September 2013, during a survey for fungal postharvest pathogens, stored 'Abate Fetel' pears showing brown rot symptoms were observed in Emilia Romagna region. In the 20% of symptomatic pears, circular and brown to black decay spots were observed; these spots were covered by a large number of yellowish or buff-colored stromata while decayed tissues remained firm. Overall, these symptoms resembled those originated by *M. polystroma*. In other 13% of stored pears the decayed tissues remained firm and. These decay lesions were covered with numerous grayish pustules containing spores. Putative pathogens were isolated on Potato Dextrose agar (PDA) and incubated at 25°C in darkness for 5 days. The colonies grown on PDA were yellowish in color, with irregular black stromatal crusts at the edges of the colonies after 10-12 days of incubation. Some colonies developed sporogenous tissue was slightly elevated above the colony surface, color buff/pale luteous, and was present at the margin of colonies (Poniatowska A. et al. 2013). Conidia developing from such cultures were one-celled, ovoid or limoniform, smooth and hyaline, measuring 12.2-20.4 x 8.4-12.3µm when grown on V8 Juice agar (V8) at 22°C and matched the description of those for *M. polystroma*. Other colonies developed a gray mass of spores in concentric rings with the reverse side black were morphologically identified as *M. fructicola*. The colony margins were smooth edged and the conidia were one-celled, limoniform, hyaline, and measuring 12.1 to 17.4 x 8.1 to 11.2 µm when grown on V8 Juice agar (V8) at 22°C. The identification of the isolates was obtained using the universal primers for *Monilinia* spp. designed by Petroczy et al. 2012. Pathogenicity was confirmed using surface-sterilized mature 'Abate Fetel' and 'William' pears wounded with a sterile needle, and

inoculated with 20 µl of a *M. polystroma* or *M. fructicola* conidial suspension (10^3 spores/ml). Control pears received sterile water and each treatment contained ten fruit. After seven days of incubation at 20°C in plastic containers with high humidity, typical symptoms of Asiatic brown rot or brown rot developed on both the wounds of all inoculated pears, while controls remained symptomless. Mean colony diameters measured after 7 days were 47.3 mm for Asiatic brown rot and 44.1 mm for brown rot, and there were no significant differences in colony diameter after seven days between *M. polystroma* and *M. fructicola* ($\alpha<0.05$).

After 14 days yellowish exogenous stromata appeared on the surface of pears infected *M. polystroma*, whereas numerous grayish pustules containing spores appeared on pears inoculated with *M. fructicola*. Control pears still remained symptomless. The fungus isolated from inoculated fruit exhibited the same morphological features of the original isolates, and PCR/sequencing analysis using primers ITS1 and ITS4 to amplify ribosomal ITS1-5.8S-ITS2 region confirmed the molecular results with primers by Petroczy et al. 2012 (GenBank Accession Nos. GU067539.1 and HQ893748.1). Although the presence of *M. polystroma* and *M. fructicola* has been already documented in Italy, this is the first time these two species are observed on Italian pears. This report suggests a broader impact since *M. polystroma* and *M. fructicola* have not been previously reported on pears in Europe. Because of the importance of pears in Italian fruit industry, knowledge about the occurrence of new pathogens will facilitate the adoption of adequate control strategies in order to reduce postharvest losses.

References

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