Disease Notes

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*Mucor piriformis* E. Fischer causes Mucor rot of pome and stone fruits during storage and has been reported in Australia, Canada, Germany, Northern Ireland, South Africa, and portions of the United States (1,2). Currently, there is no fungicide in the United States labeled to control this wound pathogen on apple. Cultural practices of orchard sanitation, placing dry fruit in storage, and chlorine treatment of dump tanks and flumes are critical for decay management (3,4). Cultivars like ‘Gala’ that are prone to cracking are particularly vulnerable as the openings provide ingress for the fungus. Mucor rot was observed in February 2013 at a commercial packing facility in Pennsylvania. Decay incidence was ~15% on ‘Gala’ apples from bins removed directly from controlled atmosphere storage. Rot was evident mainly at the stem end and was light brown, watery, soft, and covered with fuzzy mycelia. Salt-and-pepper colored sporangiophores bearing terminal sporangiospores protruded through the skin. Five infected apple fruit were collected, placed in an 80-count apple box on trays, and temporarily stored at 4°C. Isolates were obtained aseptically from decayed tissue, placed on potato dextrose agar (PDA) petri plates, and incubated at 25°C with natural light. Five single sporangiospore isolates were identified as *Mucor piriformis* based on cultural characteristics according to Michailides and Spotts (1). The isolates produced columellate sporangia attached terminally on short and tall, branched and unbranched sporangiophores. Sporangiospores were ellipsoidal, subspherical, and smooth. Chlamydospore-like resting structures (gemmae), isogametangia, and zygospores were not evident in culture. Mycelial growth was examined on PDA, apple agar (AA), and V8 agar (V8) at 25°C with natural light. Isolates grew best on PDA at rates that ranged from 38.4 ± 5.3 to 34.5 ± 2.41 mm/day, followed by AA from 30.5 ± 1.22 to 28.5 ± 2.51 mm/day, and V8 from 29.2 ± 3.0 to 26.7 ± 2.17 mm/day. Species-level identification was conducted by isolating genomic DNA, amplifying a portion of the 28S rDNA gene, and directly sequencing the products. MegaBLAST analysis of the 2X consensus sequences revealed that all five isolates were 99% identical to *M. piriformis* (GenBank Accession No. JN2064761) with E values of 0.0, which confirms the morphological identification. Koch's postulates were conducted using organic ‘Gala’ apples that were surface sanitized with soap and water, then sprayed with 70% ethanol and allowed to air dry. Wounds 3 mm deep were created using the point of a finishing nail and then inoculated with 50 μl of a sporangiospore suspension (1 x 10^5 sporangiospores/ml) for each isolate. Ten fruit were inoculated with each isolate, and the experiment was repeated. The fruit were stored at 25°C in 80-count boxes on paper trays for 14 days. Decay observed on inoculated ‘Gala’ fruit was similar to symptoms originally observed on ‘Gala’ apples from storage and the pathogen was re-isolated from inoculated fruit. This is the first report of *M. piriformis* causing postharvest decay on stored apples in Pennsylvania and reinforces the need for the development of additional tools to manage this economically important pathogen.