

Title First report of *Gliocephalotrichum bulbilium* causing cranberry fruit rot in New Jersey and Assachusetts

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Citation Plant Disease 95 (5): 618. 2011.

Keywords cranberry; fruit rot

Abstract

Cranberry (*Vaccinium macrocarpon*) fruit were collected as part of a fruit rot survey conducted in September 2010 on farms in New Jersey and Massachusetts. There are more than 20 fungal species reported as causing fruit rot (2) and symptoms are generally not diagnostic. The rotted fruit were surface sterilized in a 10% bleach solution for 5 min, sliced in half, and plated on V8 agar (nonclarified). A novel, fast-growing fungus that produced sporulating orange-brown colonies emerged from 5% of the fruit collected on three of the farms included in the survey. The fungus was notable as the only species present in the rotted fruit, suggesting it may be pathogenic. The conidia were produced as gloeoid masses on phialidic conidiogenous cells arranged in a polyverticillate penicillus. The conidiogenous cells were subtended at variable distances by zero to four sterile appendages that formed on the lightly pigmented conidiophore. On the basis of these characteristics, the fungus was identified as a species of *Gliocephalotrichum* (3). Further investigation of the growth medium revealed the presence of clustered, red-brown chlamydo spores that were produced abundantly in all isolates. These structures, also known as bulbils, are restricted to two species in the genus, *G. bulbilium* and *G. longibrachium* (1). On average, the bulbils were $42.0 \times 48.3 \mu\text{m}$ and conidia were $5.75 \times 2.5 \mu\text{m}$. On the basis of size and shape of conidia and presence of bulbils, the isolates were identified as *G. bulbilium* (1). To confirm the identity of the fungus, genomic DNA was extracted and ITS1-5.8S-ITS2 and the 5' end of the β -tubulin gene were amplified and sequenced (1). The sequences (GenBank Accession Nos. HQ828060 and HQ828061) were compared with published sequences of *Gliocephalotrichum* isolates (1) and results confirmed the cranberry isolates were *G. bulbilium*. The isolates were tested for pathogenicity on harvested cranberry fruit. Fifty ripe cranberry fruit (cv. Stevens) were inoculated by injecting approximately 20 μl (using a 26G 9.5-mm needle) of conidia ($1 \times 10^5 \text{ ml}^{-1}$) into the side of each berry. As a comparison, isolates of two common cranberry fruit rot pathogens, *Colletotrichum acutatum* and *C. gloeosporioides*, were inoculated on to fruit using the same technique. A water-only inoculation was used as the control. Fruit rot developed on all

inoculated fruit except the water control. In the case of *G. bulbilium*, all fruit rotted within 2 days, whereas the other two species developed symptoms within 4 to 7 days. *G. bulbilium* and both species of *Colletotrichum* were consistently reisolated from all of the respectively inoculated fruit. To our knowledge, this is the first report of *G. bulbilium* causing fruit rot on cranberry. The species has been reported as an important postharvest fruit rot (4) on rambutan (*Nephelium lappaceum*) in Thailand, rambutan and guava (*Psidium guajava*) in Hawaii, and durian (*Durio* spp.) in Brunei Darussalam. This report of *G. bulbilium* extends the range within the United States to include Louisiana, Hawaii, Wisconsin, West Virginia, New Jersey, and Massachusetts (2).