

First Report of Black Rot Caused by *Boeremia exigua* var. *pseudolilacis* on Artichoke in California

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DISEASE NOTES

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ABSTRACT

Artichoke (*Cynara scolymus*) is a perennial Asteraceae plant grown for its immature flower buds that are harvested as a vegetable commodity. In August 2014, commercial artichoke plantings in Santa Cruz Co., California, showed symptoms of an unidentified foliar disease. Leaf spots were circular to oval, dark brown on the adaxial side but gray on the abaxial surface, and contained concentric rings accentuated with black pycnidia. Spots ranged in size from 1 to 2.5 cm in diameter and were found primarily on older foliage. In some cases, leaf spots coalesced and resulted in a blight-like symptom. Disease incidence on two ranches reached as high as 10%; spots were not observed on stems or the bracts of the flower buds. Isolations from the leaf spot margins onto malt extract agar (MEA) resulted in the recovery of one dominant fungus that later formed ostiolate pycnidia that were similar to those found in symptomatic leaves. On synthetic nutrient-poor agar plates, six isolates (CPC 25088 [= CBS 140180], and CPC 25089 to 25093) formed brown, globose, nonpapillate pycnidial conidiomata up to 160 μ m in diameter. Conidia were ellipsoid to oblong, mostly aseptate, and measured 4 to 7 \times 2 to 3 μ m. Conidia were rarely 2-septate and measured 10 to 12 \times 3 μ m. DNA sequencing of isolates was conducted for the following genes: ITS (GenBank Accession Nos. KT193797 to KT193802), actin (KT193803 to KT193807), calmodulin (KT193808 to KT193811), and translation elongation factor 1- α (KT216071 to KT216075). In comparison with published sequences ([Berner et al. 2015](#)), artichoke isolates had 100% identity for all loci with the translation elongation factor 1- α being the most diagnostic. Based on morphological characteristics and DNA sequence data the isolates were identified as *Boeremia exigua* var. *pseudolilacis* ([Aveskamp et al. 2010](#)). To test pathogenicity, six isolates were grown on MEA until pycnidia formed. Spore suspensions (1×10^5 conidia/ml) were prepared and sprayed onto leaves of

potted artichoke plants; plants were incubated in a dew chamber (100% relative humidity) for two days, after which plants were maintained in a greenhouse at 24 to 27°C. After four days, pale gray spots began to develop on inoculated plants; 10 days after inoculation, spots had turned dark brown, with visible pycnidia, and appeared identical to spots observed in the field. Isolation from inoculated plants resulted in the recovery of fungi that were confirmed to be the same as the original isolates. Control artichoke plants were sprayed with water and incubated in the same way as other plants, but did not develop any spots. The experiment was repeated and the results were the same. To our knowledge, this is the first report of black rot caused by *B. exigua* var. *pseudolilacis* on artichoke in California and the world. In other studies, black rot disease of artichoke caused by *B. exigua* var. *exigua* has been reported in Japan (Kubota and Abiko 2002) and New Zealand (Farr and Rossman 2015); for artichoke in Australia and Brazil, the pathogen has been reported as *B. exigua* (Farr and Rossman 2015).

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