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[Home](#) > [Plant Disease](#) > [Table of Contents](#) > [Abstract](#)[Previous Article](#) | [Next Article](#)

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Page 967

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Disease Notes

First Report of *Neofusicoccum australe*, *N. luteum*, and *N. parvum* Associated With Avocado Branch Canker in California

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In 1953, branch cankers on California avocado (*Persea americana* Mill.) trees were attributed to a *Botryosphaeria* anamorph, *Dothiorella gregaria* (teleomorph *B. ribis*) (2), and the disease was known as Dothiorella canker. Since this time, it has been suggested that this fungus should probably be classified as *Fusicoccum aesculi* Corda (teleomorph *B. dothidea*) (3). To our knowledge, *B. dothidea* is the only reported *Botryosphaeriaceae* species causing Dothiorella canker on avocado in California. Between the summer of 2008 and the winter of 2009, five trees from each of eight avocado orchards in five counties (San Diego, Riverside, Ventura, Santa Barbara, and San Luis Obispo) were surveyed for Dothiorella canker symptoms to verify the associated *Botryosphaeriaceae* species. Typical Dothiorella canker symptoms observed included darkened and friable bark with a dried, white, powdery exudate. Underneath the bark, cankers were variable in shape and some penetrated into the heartwood. Small sections of tissue (0.5 cm²) were excised from two to four separate cankers per tree and placed onto potato dextrose agar amended with tetracycline (0.01%) (PDA-tet). The most frequently isolated fungi, based on general growth pattern, speed, and colony color, were in the *Botryosphaeriaceae* with the following percent recovery by county: Riverside—40 and 100% (site 1 and 2, respectively); San Diego—60% (site 3); Ventura—42 and 53% (site 4 and 5, respectively); Santa Barbara—33% (site 6); and San Luis Obispo—32 and 60% (site 7 and 8, respectively). Pycnidia of *Botryosphaeriaceae* species were also observed on old diseased avocado tree branches. Sequenced rDNA fragments (ITS1, 5.8S rDNA, ITS2, amplified with ITS4 and ITS5 primers) were compared with sequences deposited in GenBank. Four different *Botryosphaeriaceae* species were identified and included *Neofusicoccum australe*, *B. dothidea*, *N. luteum*, and *N. parvum*, with species nomenclature based on the work of Crous et al. (1). Pathogenicity tests were conducted in the greenhouse on 1-year-old avocado seedlings, cv. Hass, with one randomly chosen isolate from each of the *Botryosphaeriaceae* species noted above. Four replicate seedlings were stem-wound inoculated with a mycelial plug and covered with Parafilm. Sterile PDA plugs were applied to four seedlings as a control. Over a period of 3 to 6 months, seedlings were assessed for disease symptoms that included browning of leaf edges and shoot dieback. Mean vascular lesion lengths on stems were 64, 66, 64, and 18 mm for *B. dothidea*, *N. parvum*, *N. luteum*, and *N. australe*,

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respectively. Each fungal isolate was consistently reisolated from inoculated seedlings, thus fulfilling Koch's postulates. To our knowledge, this is the first report of *N. australe*, *N. luteum*, and *N. parvum* recovered from branch cankers on avocado in California. These results are significant because *Botryosphaeriaceae* canker pathogens are known to enter the host plant through fresh wounds (pruning, frost, and mechanical). With high-density planting becoming more common, which requires intensive pruning, the transmission rate of these pathogens could increase in California avocado groves.

References: (1) P. W. Crous et al. *Stud. Mycol.* 55:235, 2006. (2) F. F. Halma and G. A. Zentmyer. *Calif. Avocado Soc. Yearb.* 38:156, 1953. (3) W. F. T. Hartill and K. R. Everett. *N. Z. J. Crop Hortic. Sci.* 30:249, 2002.

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