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Disease Notes

First Report of *Colletotrichum karstii* Causing Glomerella Leaf Spot on Apple in Santa Catarina State, Brazil

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Glomerella leaf spot (GLS) is an emerging disease of apple (*Malus domestica* Borkh.) that has been reported in regions with a humid subtropical climate, such as southern Brazil, the southeastern United States, and more recently eastern China. GLS is favored by high humidity and temperatures between 23 and 28°C and can result in extensive defoliation when the severity is high. The disease was first reported 1988 in Brazil on cvs. Gala and Golden Delicious in orchards in Paraná State (3), but now is widespread in the country's producing areas. Two *Colletotrichum* species of different complexes have been associated with GLS, *C. gloeosporioides* (Penz.) Penz. & Sacc. and its sexual stage *Glomerella cingulata* (Stoneman) Spaulding & Scherenk, and *C. acutatum* J. H. Simmonds, although GLS is more commonly associated with the former. In the summer of 2012, necrotic spots were observed on apple leaves (cv. Gala) in Santa Catarina state, Brazil. The first symptoms were reddish-brown spots, evolving to small necrotic lesions 1 to 10 mm long at 7 to 10 days after symptoms were first noted. Pure cultures were obtained by monosporic isolation and grown on PDA at 25°C and with a 12-h photoperiod under fluorescent light. The color of the upper surface of the colony varied from white to gray and the reverse was pink. The conidia length and width ranged from 9.1 to 17.1 µm (= 12.8) and from 2.9 to 6.8 µm (= 4.9), respectively, and were cylindrical, hyaline, and straight. After germination, conidia formed oval or circular appressoria measuring between 4.0 and 10.0 (= 6.3) × 3.0 and 9.0 (= 5.7). To confirm pathogenicity, susceptible apple seedlings (cv. Gala) were inoculated with a suspension of 1×10^6 conidia.mL^{-1}. Seedlings sprayed with sterile distilled water served as controls. Seedlings were incubated in a moist chamber at 25°C and 100% RH for 48 h. First symptoms appeared 4 days after inoculation and were similar to those observed in the field. The control treatment remained symptomless. The pathogen was reisolated from lesions, confirming Koch's postulates. Fungus was molecularly characterized by sequencing the internal transcribed spacer (ITS) rDNA and glyceraldehyde-3-phosphate dehydrogenase (GAPDH), and the nucleotide sequence was deposited in the GenBank database (KC876638 and KC875408). *C. karstii*, considered as part of the *C. boninense* species complex (1), was identified with 100% sequence homology. This species was previously reported in China (4), Thailand, and the United States, affecting *Orchidaceae* plants (2), and in Brazil it

has been reported affecting *Carica papaya*, *Eugenia uniflora*, and *Bombax aquaticum* (1). To our knowledge, this is the first report of *C. karstii* causing GLS on apple in Brazil. The development of pre-harvest management practices may be warranted to manage this disease.

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