

First Report of Resistance to Mefenoxam in *Phytophthora cactorum* in the United States and Elsewhere. S. N. Jeffers and G. Schnabel, Department of Entomology, Soils, and Plant Sciences, Clemson University, Clemson, SC 29634; and J. P. Smith, Edisto Research and Education Center, Clemson University, Blackville, SC 29817. Plant Dis. 88:000, 2004; published on-line as D-2004-0000-00N, 2004. Accepted for publication xx yyy 2004

Phytophthora cactorum causes crown rot of strawberry (*Fragaria ×ananassa*) (2), a disease that has been particularly severe over the last five years in the southeastern United States. In fall of 2001, strawberry plants (cv. Camarosa) in a field in Lexington County, South Carolina exhibited typical crown rot symptoms (2) 1 to 2 weeks after transplanting even though plants had been drenched with mefenoxam (Ridomil Gold; Syngenta Crop Protection, Greensboro, NC) immediately after transplanting. Initially, we observed leaves that had marginal necrosis and were smaller than normal and discolored. Soon after, diseased plants appeared stunted and unthrifty compared to other plants in the field, and some of these plants eventually wilted and died. Severely affected plants had necrotic roots and decayed crowns. Ten symptomatic plants were collected for isolation. In the laboratory, root and crown tissues were rinsed in running tap water and blotted dry, small pieces of necrotic tissue were placed aseptically on PAR-V8 selective medium (1), and isolation plates were placed at 20°C in the dark for up to 7 days. *P. cactorum* was recovered from six plants. Isolates produced characteristic asexual and sexual structures directly on the isolation plates—i.e., papillate sporangia on sympodial sporangiophores and oospores with paragynous antheridia (2). A single hypha of an isolate from each plant was transferred to fresh PAR-V8, and pure cultures were stored on cornmeal agar in glass vials at 15°C in the dark. All six isolates from the Lexington Co. field and nine other isolates of *P. cactorum* from strawberry (three from SC, three from NC, and three from FL) were tested for sensitivity to mefenoxam on fungicide-amended medium. Mefenoxam was added to 10% clarified V8 juice agar (cV8A) after autoclaving so that the concentration in the medium was 100 ppm. Agar plugs from active colonies were transferred to mefenoxam-amended and non-amended cV8A (three replicates per treatment), plates were placed at 25°C in the dark for 3 days, and then linear mycelium growth was measured. All six isolates from Lexington Co. were highly resistant to mefenoxam with mycelium growth relatively unrestricted on mefenoxam-amended medium (73 to 89% of that on non-amended medium). In comparison, the other nine isolates were sensitive to mefenoxam with mycelium growth severely restricted by 100 ppm mefenoxam (0 to 7% of that on non-amended medium). This is the first report of mefenoxam resistance in *P. cactorum* on strawberry or any other crop in the United States and elsewhere. Because mefenoxam is the primary fungicide used to manage *Phytophthora* crown rot in the southeastern United States, resistance may limit use of this fungicide in strawberry production.

References: (1) A. J. Ferguson and S. N. Jeffers. Plant Dis. 83:1129, 1999. (2) E. Seemüller. Crown rot. Pages 50-51 in *Compendium of Strawberry Diseases*, 2nd ed. J. L. Maas, ed. APS Press, St. Paul, MN, 1998.