

First Report of Potato Tuber Sprout Rot Caused by *Fusarium sambucinum* in Michigan. P. S.

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Fusarium dry rot is one of the most important diseases of potato (*Solanum tuberosum* L.), affecting tubers in storage and whole seed or seed pieces after planting (2). *Fusarium sambucinum* Fuckel (teleomorph *Giberella pulicaris*) is the most common pathogen causing dry rot of stored tubers in North America. (4). Cut seed potato tubers of cvs. FL1879 and Pike with severe sprout rot were collected in Michigan during May 2006. As well as having rotted sprouts, all diseased tubers had dry rot. When diseased sprouts were cut in half, brown, necrotic lesions could be seen spreading down the center of the sprout in vascular tissue and at the base of the sprout in tuber tissue. Pathogen isolations were made from both infected tuber tissue and diseased sprouts on potato dextrose agar (PDA). In both cases, only *F. sambucinum* was isolated from diseased sprout and tuber tissue. Identification of the pathogen was based on colony and conidial morphology. This included white, fluffy mycelium on the surface and crimson coloration of the colonies viewed from the underside of PDA plates and large distinctive macroconidia (3). Identification was confirmed by comparison of ITS (internal transcribed spacer) sequence data with reference isolates. The ITS region of rDNA was amplified by polymerase chain reaction (PCR) with primers ITS1/ITS4 and sequenced. BLASTn analysis (1) of the sequence obtained showed a 100% homology with *F. sambucinum* Fuckel. For inoculum production, isolates were grown on PDA at 8°C for 14 days prior to inoculation. Pathogenicity was tested in potato tubers of cv. FL1879 with a single isolate collected from diseased sprouts. Whole seed tubers with 4 mm long sprouts were cut in half longitudinally with a sterile knife to ensure that seed pieces had viable sprouts. The cut surfaces of seed pieces were spray inoculated with 200 ml of conidial suspension (1×10^4 conidia ml⁻¹) over the entire cut surface to give a final dosage of approximately 1 ml per seed piece. Care was taken to limit inoculum spray to the cut surface so that sprouts were not inoculated. Seed pieces (40 per replicate \times 4 replicates) were then placed in plastic boxes (30 \times 15 \times 10 cm) and incubated in the dark at 18°C and 95% relative humidity for 30 days in a controlled environment chamber. As a control, cut seed pieces were sprayed with sterile distilled water and incubated as above. All tubers inoculated with the pathogen developed typical *Fusarium* dry rot symptoms consisting of a brown, dry decay of tuber tissue with mycelial lined cavities. Sprouts on inoculated tubers developed symptoms that were observed in the initially collected seed pieces, and *F. sambucinum* was reisolated from all infected sprouts. The noninoculated control tubers did not develop any symptoms of dry rot. The results of the pathogenicity tests indicate that *F. sambucinum* caused sprout rot on potato seed pieces. Since only the cut surfaces of tubers were inoculated, it is assumed that infection of sprouts is systemic through the tuber. To our knowledge, this is the first report of *F. sambucinum* causing a sprout rot of developing sprouts on seed tubers in the United States.

References: (1) S. F. Altschul et al. Nucleic Acids Res. 25:3389, 1997. (2) L. E. Hanson et al. Phytopathology 86:378, 1996. (3) P. E. Nelson et al. Pages 118-119 in: *Fusarium* Species: An Illustrated Manual for Identification. The Pennsylvania State University, University Park and London, 1983. (4) G. A. Secor and B. Salas. *Fusarium* dry rot and *Fusarium* wilt. Pages 23-25 in: Compendium of Potato Diseases. 2nd ed. W. R. Stevenson et al., eds. The American Phytopathological Society, St. Paul, MN, 2001.

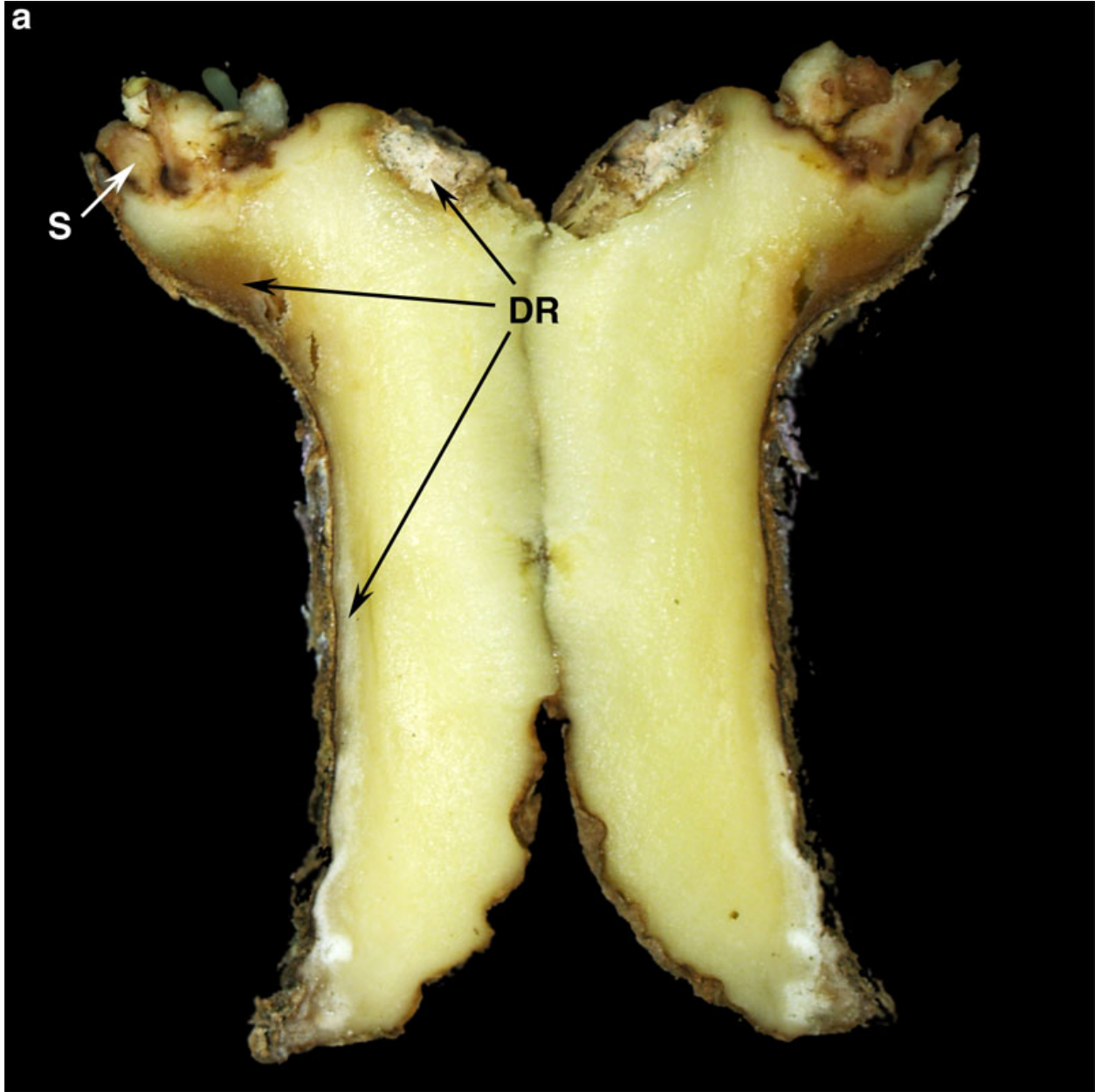


Figure a. Potato seed piece cut in half. Showing internal symptoms of Fusarium dry rot in the tuber tissue and Fusarium sprout rot. DR, dry rot; S, sprout.

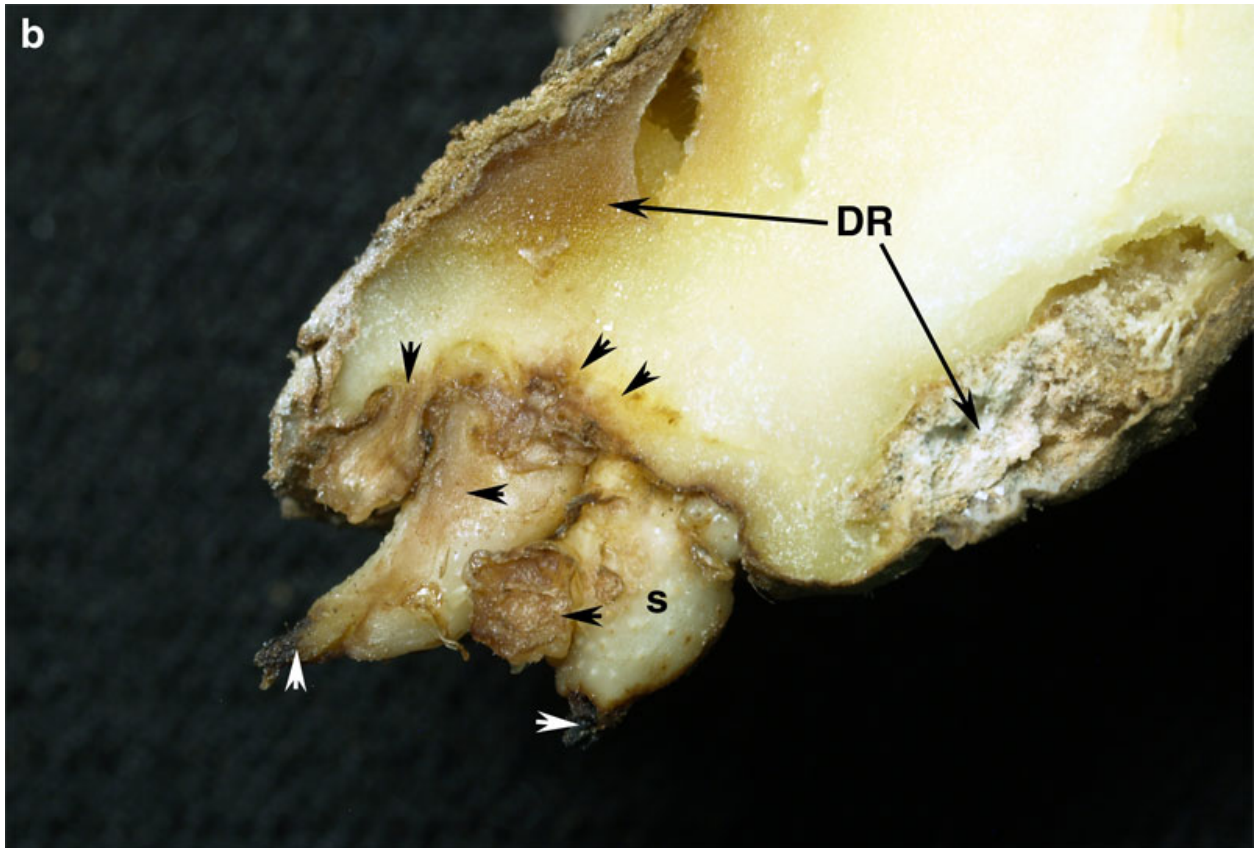


Figure b. Close up of seed piece shown in Fig. a, illustrating the symptoms of *Fusarium* sprout rot (arrow heads). *Fusarium* sprout rot is characterized by a brown necrosis of the sprout spreading out from the tuber tissue into to the sprout. DR, dry rot; S, sprout.