



plant disease

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Disease Notes

First Report of Pitch Canker on Pines Caused by *Fusarium circinatum* in Portugal

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In November of 2007, dieback symptoms (basal needle dieback, wilting, and dieback of terminal shoot) were observed on plant groups of *Pinus radiata* and *P. pinaster* in a tree nursery located in Anadia in the central region of Portugal (40°26'N, 08°23'W). Two containers with a total of 112 plants per pine species (with and without symptoms) were collected. Small pieces (5 mm long; two from the roots, stem at the soil level, and the aerial part, totaling six pieces) of 20 symptomatic plants were sterilized with 3% sodium hypochlorite, and isolations were performed on potato dextrose agar (PDA) supplemented with 0.5 mg/ml of streptomycin sulfate. A species of *Fusarium* was isolated from all infected tissues and pure cultures were obtained by single hyphal tip transfers on PDA and Spezieller Nährstoffarmer agar and incubated at 25°C for 10 days with a 12-h photoperiod. The species was identified as *Fusarium circinatum* Nirenberg & O'Donnell (= *F. subglutinans* Wollenweb & Reinking) on the basis of morphological and cultural characteristics (2). They produced white, aerial mycelia, violet pigment, typically three-septate macroconidia with slightly curved walls, single-celled microconidia, and characteristic sterile, coiled hyphae. Microconidia were ovoid or allantoid and born in false heads on aerial polyphialides. The identification was confirmed by PCR with specific primers CIRC1A/CIRC4A, resulting in a 360-bp DNA fragment of the two nuclear ribosomal intergenic spacer regions (3). Pathogenicity tests were performed by inoculating 5- and 9-month-old *P. pinaster* and *P. radiata* seedlings, respectively. Plants belonging to *P. pinea* species (8-month-old), the second most important pine in the country, were also included in the tests. Small strips of bark (10 × 1 mm) were cut from the stems and similar-sized pieces of PDA colonized by two isolates of *F. circinatum* were placed in contact with the open wounds and covered with Parafilm. Ten seedlings for each pine species, isolate, and control (with sterile PDA) were provided in a total of 90 plants. First symptoms, basal needle and shoot dieback, were observed in *P. radiata* 8 days after inoculation. One month later, all *P. radiata* and 70% of the *P. pinaster* plants were dead. In all *P. pinea* plants, needles turned red along the main stem, from center to periphery, but only 2% of these plants presented wilting of the terminal shoot after 1 month. No symptoms were observed on control seedlings. *F. circinatum* was reisolated from symptomatic plants of the three species tested. To our knowledge, this is the first report of *F. circinatum* in Portugal. Pitch canker, caused by *Gibberella circinata* (anamorph *F. circinatum*), is one of the most aggressive pathogens on several pine species in the world (1). In 2005, the fungus was detected in the European continent affecting *P. radiata* and *P. pinaster* in northern Spain.

References: (1) E. Landeras et al. *Plant Dis.* 89:1015, 2005. (2) H. I. Nirenberg and K. O'Donnell. *Mycologia* 90:434, 1998. (3) W. Schweigkofler et al. *Appl. Environ. Microbiol.* 70:3512, 2004.