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Disease Notes

Abstract

First Report of *Fusarium verticillioides* Causing Stalk and Root Rot of Sorghum in Spain

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Sweet sorghum (*Sorghum bicolor* L.) is considered one of the most promising crops for bioethanol production in many countries and is a focus of bioenergy research worldwide. In July 2011, plants of the sweet sorghum cv. Suchro 506 in Oropesa (Toledo, Spain, 40.048577°N, 5.360298°W) (European Datum 1950 UTM zone 30 N) were observed with severe wilting. Upon examination, the lower internodes were found to be straw colored. When the plant was split, the internal pith was reddish, soft, and disintegrating. Small pieces of symptomatic stems and roots were surface disinfected in sodium hypochlorite (0.5% wt/vol) for 2 min and air dried. The sections were then placed on either PDA (potato dextrose agar) medium or Komada agar and incubated for 5 days at 25°C. Isolations from diseased stem and root tissue consistently yielded *Fusarium verticillioides* (Sacc.) Nirenberg (3). The small, hyaline, mostly single-celled, oval to club-shaped microconidia of *F. verticillioides* were produced in long catenate chains arising from monophialides. PCR amplification of the ITS1-5.8S-ITS2 was performed using the primers and protocols described elsewhere (4) and the fragments obtained were subsequently sequenced in both directions. Sequences were deposited in the EMBL Sequence Database (Accession Nos. HE652878, HE652879, HE652880, and HE652881). Four of the recovered *F. verticilliodes* isolates were tested in pathogenicity assays. One-week-old cultures of each isolate were homogenized in 400 ml of sterile water and 200 ml were used to inoculate water-growth-chamber-grown plants in 500-ml pots. Two pots each with three plants of cv. Suchro 506 were inoculated for each isolate. Water with sterile PDA was used as a control. All plants were kept at 20 to 25°C under a photoperiod of 14 h at 12,000 lux. After 21 days, above- and belowground parts were dried for 24 h at 60°C. Total length and dry weight of both sections were obtained. Inoculated plants produced root rot symptoms characteristic of *F. verticillioides* with dark red discolorations of the cortex of seedling roots (1), whereas the plants watered with water containing only PDA did not produce symptoms. Inoculated plants also had a decrease in dry weight for above- and belowground sections (P = 0.05) compared with the control with 43 and 47% reductions, respectively. The length of aerial parts was approximately 5% less in inoculated plants compared with control plants. *F. verticillioides* was reisolated from all inoculated plants. Sorghum stalk and root rot caused by *F. verticillioides* has been reported in different countries including India (2) and the United States (3). To our knowledge, this is the first report of *F. verticillioides* causing stalk and root rot of sorghum in Spain. An increase of production of this crop is expected to meet targets of the renewable energy share in Spain and any disease compromising yield may be a threat to this endeavour.

References: (1) R. A. Frederiksen and G. N. Odvody. Compendium of Sorghum Diseases. The American Phytopathological Society. St. Paul, MN, 2000. (2) N. N. Khune et al. Indian Phytopathol. 37:316, 1984. (3) J. F. Leslie and B. A. Summerell. The *Fusarium* Laboratory Manual. Blackwell Publishing, Ames, IA, 2006. (4) T. J. White et al. PCR Protocols: A Guide to Methods and Applications. M. A. Innis et al., eds. Academic Press, New York, 1990.