

### Research Note

#### THE IDENTITY AND CHARACTERIZATION OF DOWNY MILDEW ON SORGHUM IN PUERTO RICO<sup>1</sup>

In February 1985, downy mildew was observed on a Sorghum-Sudan grass hybrid (ATx623 × Greenleaf) 40 days after planting in the Lajas Valley in Puerto Rico. Infected leaves were collected and taken to the plant pathology laboratory of the Tropical Agriculture Research Station of the United States Department of Agriculture in Mayagüez. Detached infected leaves were placed in darkness at 20° C in humid chambers to stimulate pathogen sporulation. Conidiophores and conidia were observed 8 to 10 hours after dark incubation. Conidia were rinsed from the infected detached leaves and observed in water droplets on glass microscope slides. After 2 to 6 hours at 20° C, tubes had sprouted from the majority of conidia.

Sorghum downy mildew differentials (Tx412, CS3541, Tx430, and QL-3-India) were inoculated with the local downy mildew strain in the laboratory and in the field. Detached infected leaves were used for laboratory inoculations and intact infected plants of ATx623 × Greenleaf were used as field disease spreaders. Ten plants of each differential were either transplanted next to infected field plants in Lajas or placed underneath detached infected leaves in vitro. All plants were inoculated in the 2-leaf stage.<sup>2</sup>

In the laboratory test, 3 out of 10 plants of Tx412 developed local lesions after an 8 day incubation at 26° C. No symptoms were found on CS3541, Tx430 or QL3 under like conditions. All differentials were placed in darkness at 20° C and saturated humidity to promote downy mildew sporulation. Downy mildew sporulation was found only on the 3 infected plants of Tx412.

In the field test, 10 out of 10 plants of Tx412 showed local lesions and sporulation after 14 days. In 2 out of 10 plants of CS3541, local lesions without sporulation were present. Tx430 and QL3 were completely symptomless.

From our results race 1 of *Peronosclerospora sorghi* is suggested as the primary cause of sorghum downy mildew in Puerto Rico. Previous report of downy mildew in Puerto Rico did not include the analysis of conidia germination or pathogenicity testing crucial to downy mildew identifi-

<sup>1</sup> Manuscript submitted to Editorial Board July 18, 1985.

<sup>2</sup> Craig, J. and R. A. Frederiksen, 1983. Differential sporulation of pathotypes of *Peronosclerospora sorghi* on inoculated sorghum, Plant Dis. 67: 278-79.

cation.<sup>3</sup> Host indices often note *Sclerospora graminicola* as a cause of sorghum downy mildew, but controlled inoculations of *S. graminicola* to sorghum have failed.<sup>4</sup>

*Peronosclerospora sorghi* was originally misidentified as *Sclerospora graminicola* and remanent confusion persists.<sup>5</sup> Quarantine officials should be aware of the confusion in speciation and identification of grass downy mildews. They should be wary of reports of downy mildews which do not include pathogenicity tests and pathogen germination studies.

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<sup>3</sup> Liu, L. J. and G. Ramírez-Oliveras, 1980. Occurrence of sorghum and Johnsongrass downy mildew in Puerto Rico. *J. Agric. Univ. P.R.* 64 (4): 489-92.

<sup>4</sup> King, S. B. and O. J. Webster, 1969. Downy mildew of sorghum in Nigeria. *Indian Phytopathol.* 23: 342-49.

<sup>5</sup> Weston, W. H., Jr. and B. N. Uppal, 1932. The basis for *Sclerospora sorghi* as a species. *Phytopathol.* 22: 573-86.