First Report of Stripe Rust caused by *Puccinia striiformis* f. sp. *tritici* on Wheat in Florida

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The wheat stripe rust pathogen, *Puccinia striiformis* Westend. f. sp. *tritici* Erikson (*Pst*), occurred on several experimental wheat (*Triticum aestivum* L.) lines planted at the North Florida Research and Education Center in Quincy, Gadsden Co., FL in early February 2003 (Fig. 1). Several experimental lines in the 2003 Advanced Wheat A (AWA), the Advanced Wheat B (AWB), and the Uniform Southern Wheat Nursery (US) yield trials then showed traces of stripe rust on the leaves of the plants. Diseased lines included: FL K-R-7-1-G4-B27-C3 (AWA), FL K-R-7-1-G1-B21-C4 (AWA), FL 90192-W14-Y1-A7-C9 (AWB), FL8524-X7-V1-21-A4-B1-C (AWB), and NC98-26143 (US). Field plots were 55 ft² (5.11 m²) in size and arranged in a randomized complete block design with two replications. By April, susceptible lines had developed rust severities ranging from 80 to 100% with infection on leaves and leaf sheaths (Figs. 2 and 3). Stripe rust was prevalent throughout the plots, indicating a uniform rust distribution.

Fig. 1. Appearance of the leaves, leaf sheaths, and inflorescence of wheat stripe rust-infected wheat lines in February at the North Florida Research and Education Center, Quincy, FL.
Pst-infected leaf samples were analyzed for virulence factors and race identification on a known set of wheat lines near-isogenic for single genes for stripe rust resistance and differential genotypes currently used to differentiate races of Pst in North America (3). An isolate collected from the wheat line FL8524-X7-V1-21-A4-B1-C was classified as race PST-78 (virulent on Lemhi, Heines VII, Lee, Fielder, Express, Yr8, Yr9, and Clement). The isolate from wheat line FLK-R-7-1-GH-B27-C3 was identified as PST-80 with virulence on the same differential genotypes as PST-78 plus Produra. These two races were first isolated in the year 2000 from samples analyzed from the south central U.S. (Texas, Arkansas, Louisiana, etc.) and California (3). In 2001, PST-78 and PST-80 dominated rust populations prevalent in south central and central states (i.e., Kansas, Nebraska, and South Dakota) (2). By 2002, these races were prevalent throughout the U.S. (X. M. Chen, unpublished data).

An isolate from wheat line NC98-26143 was identified as race PST-97 with virulence on the same differential genotypes as PST-78 plus Stephens. An isolate from wheat line 90192-W14-Y1-A7-C9 was identified as PST-98, which has virulence on the same differential genotypes as PST-80 plus Stephens. These two races were first detected in 2002 throughout the United States (X. M. Chen, unpublished data). The four races (PST-78, PST-80, PST-97, and PST-98) isolated from wheat lines in Florida also were commonly detected throughout the U.S., especially in Texas, Louisiana, Arkansas, Oklahoma, and Georgia in 2003 (X. M. Chen, unpublished data).

The wheat stripe rust pathogen only infects members of the Poaceae family, with wheat and triticale (X Triticosecale Wittmack) being the primary hosts. Several wild grasses, including wheatgrass (Agropyron spp.), bromegrass (Bromus spp.), and Virginia wild rye (Elymus virginicus L.), which are not commonly found in Florida, are less important hosts (1). The disease is worldwide in distribution in wet areas with cool temperatures, especially in mountainous and upland areas. In the United States, stripe rust frequently occurs in western states like California, Washington, Idaho, and Oregon (3).

In Florida, wheat is typically planted in late fall and harvested in late spring. Most wheat grown in the state is used for livestock grazing or wildlife forage plots, although some wheat is milled for use in products that require soft red winter wheat. Wheat occupies approximately 10,000 acres in the state (2002 Florida Agricultural Statistics).

An unusually cool and wet winter and spring (4) encouraged a scattered outbreak of stripe rust of wheat on susceptible experimental lines of wheat. This report constitutes the first documented case of stripe rust of wheat in Florida.

Several fungicides are registered by the EPA for control of stripe rust on wheat, however, these products may not be legal if wheat is grazed by livestock. If a fungicide application is warranted, it should begin at the first sign of disease.
Literature Cited


