U.S. Stripe Rust in 2006

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Puccinia striiformis causes destructive stripe rust on wheat and barley. Virulence changes in the pathogen populations can render previously resistant cultivars susceptible. The disease was monitored through trap plots and field surveys. In 2006, wheat stripe rust occurred in over 20 states but generally at a low level. The damage was the least for the last seven years mainly due to the widespread of dry weather during the growing season. However, the disease caused 15% yield losses in California and up to 28% yield losses on susceptible winter and spring wheat cultivars in experimental plots in eastern Washington. Barley stripe rust occurred in Arizona, California, Idaho, Oregon, and Washington and the yield loss was below one million bushels. To identify new races and determine race frequencies and distributions, stripe rust samples from wheat and grasses were tested on a set of 20 wheat genotypes to differentiate races of *P. striiformis* f. sp. *tritici* (PST) and those from barley and grasses were tested on a set of 12 barley genotypes to differentiate races of *P. striiformis* f. sp. *hordei* (PSH). A total of18 PST races and 11 PSH races were identified, of which five PST and two PSH races were new. The most predominant and widespread wheat stripe rust race was PST-100 (virulent on Lemhi, Heines VII, Produra, Yamhill, Stephens, Lee, Fielder, Express, Yr8-AVS, Yr9-AVS, Clement, and Compair) with a frequency of 29.4%. Other predominant PST races were PST-114 (20.3%) only in the Pacific Northwest, PST-101 (16.8%) almost restricted in California, and PST-102 (11.9%) throughout the U.S., which all have the PST-100 virulences plus those on Moro and Tres, Chinese 166, and Tres, respectively. The most predominant barley stripe rust race was PSH-71 (Virulent on Topper, Emir, Hiproly, Varunda, Abed Binder 12, Trumpf, Mazurka, Bigo, and Bancroft) with a frequency of 25%. The results should be useful in choosing resistance genes for breeding programs.