

Warding Off Stem Rust of Wheat

Yesterday's Success and Today's Need



Stem rust, a fungus disease of small grain cereals, was responsible for massive epidemics on wheat during the 20th Century in North America. The fungus that causes the disease is difficult to control because it constantly evolves and mutates into new races.

Genetic resistance is one of the best means of control for the rust diseases; however, resistance provided by just a few genes can be readily rendered ineffective when a new race of the fungus arises. In the mid-1950s, wheat breeders succeeded in developing wheats whose effective genetic resistance was based on many genes. This package of resistance genes has protected wheat from stem rust epidemics for more than 40 years. In 1999, a new race of stem rust appeared in Uganda (designated as race TTKS or Ug99) and has since spread to Kenya, Ethiopia, and Yemen. The appearance of Ug99 is alarming because it indicates that the package of resistance genes bred into many wheats around the world is no longer effective. If Ug99 and races like it continue to spread, farmers could experience severe stem rust epidemics that may result in local famines. If efforts to control stem rust of wheat are relaxed, the disease can quickly reemerge as the most important disease of wheat worldwide.

How do we prevent such an outbreak from occurring? Plant pathology is the essential element in preventing an epidemic of this scale. The research done by plant pathologists is crucial in making sure we stay ahead of evolving rust pathogens that could put the world's food security at risk.



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For more information on this and other stories about plant pathology, please contact APS at apsinfo@scisoc.org or +1.651.454.7250.

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