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**Fighting A Worldwide Wheat Threat**

*ScienceDaily* (July 2, 2008) — Wheat stockpiles are at a 30-year low and production costs are rising, but what really scares wheat growers is the specter of Ug99, a new rust fungus to which very few of the currently grown varieties of wheat are resistant.

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But the seed of a solution may sprout this fall when Agricultural Research Service (ARS) scientists release the first wheat lines pyramiding two or more genes for resistance to Ug99. One of these lines will be released this fall as a specialty wheat for the eastern United States. Wheat breeders will be able to use the new line along with others to develop new commercial varieties with high yield and Ug99 protection.

ARS has a priority program tackling many aspects of Ug99 with a team of more than 10 scientists, all of whom are keenly aware of Ug99's growing shadow, which emerged in Uganda and has already spread to Kenya, Ethiopia, Sudan, Yemen, and Iran. The scientists are located at ARS

labs at Raleigh, N.C.; Aberdeen, Idaho; St. Paul, Minn.; Manhattan, Kan.; and Fargo, N.D.

Among their tasks are determining U.S. wheat and barley vulnerability to Ug99, identifying new sources of genetic resistance, discovering molecular markers to speed up breeding for protection, developing rapid detection methods, and nationwide surveillance for Ug99 in the United States.

To support the monitoring work, ARS has established "trap" plots of wheat along known wheat rust pathways throughout the United States.

Of course, the ARS scientists are not going it alone. They're collaborating with researchers across the country and around the world to find ways to deal with this massive threat to a global food staple.

As part of this cooperation and collaboration, ARS coordinates sending promising U.S. wheat varieties to Kenya and evaluating them for Ug99 resistance. This provides U.S. wheat breeders with a head start on protecting the country's wheat. The screening is done in partnership with the International Maize and Wheat Improvement Center (CIMMYT), based in Mexico.

ARS has already evaluated more than 5,000 U.S. wheat lines in Africa through this program. Results from the 2005-2007 screening showed that Ug99 has overcome even more major resistance genes than previously believed.

ARS also will develop new sources of genetic resistance to rusts from three wild relatives of wheat and make it easier to introduce those genes into commercial wheat varieties.

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The above story is reprinted (with editorial adaptations by ScienceDaily staff) from materials provided by [USDA/Agricultural Research Service](#).

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Most wheat varieties grown around the world today have no resistance to Ug99, a new race of wheat rust. (Credit: Photo by Yue Jin)

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