

Scientists gain in struggle against wheat rust

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(AP) -- Researchers are deploying new wheat varieties with an array of resistant genes they hope will baffle and defeat Ug99, a highly dangerous fungus leapfrogging through wheat fields in Africa and Asia.

"Significant progress has been made," [plant geneticist](#) Ravi Singh and collaborators said in a paper presented Tuesday to leading international wheat experts at a four-day conference on combating the re-emerged, mutant form of stem rust, an old plant disease.

Scientists still spoke of a potential [agricultural disaster](#).

"A global food crisis is still a distinct possibility if governments and international institutions fail to support this rescue mission," Norman Borlaug, 94, the Nobel Prize-winning American agronomist, said in a statement.

The Borlaug Global Rust Initiative, an alliance of research institutions, organized the conference in Ciudad Obregon, northwest Mexico, where Borlaug did much of his research leading to the "Green Revolution" in farm productivity worldwide, including work that helped suppress stem rust a half-century ago.

More than 200 crop scientists from around the world were attending the workshop sessions, where three dozen papers were to be presented discussing the effort to crossbreed [wheat varieties](#) resistant to the new, virulent type of [rust fungus](#).

It emerged in Uganda in 1999 - hence Ug99 - and has since spread east and northeast through Africa, and into southwest Asia, as far north as Iran. Global wind models indicate the [crop disease](#) may next spread into Pakistan, Afghanistan and India.

In some areas of Kenya, the reddish, wind-borne fungus has destroyed 80 percent of the wheat in farmers' fields, the Borlaug initiative's office said.

The researchers led by Singh, of the Mexico-based International Maize and Wheat Improvement Center, have engaged in "shuttle" crossbreeding of wheat varieties in the search for Ug99-resistant properties, developing varieties in test fields in Mexico and Syria, exposing them to Ug99 in Africa, returning them for refinement, then exposing them again in Africa.

Singh said they have produced new types that are not only resistant, but higher-yielding than today's most popular varieties.

The resistance comes not from one or two genes that convey immunity, but from an array of "multiple minor genes" that together achieve "near-immunity," the paper said.

Because Ug-99 mutated and overcame one and then another major resistance gene in Kenya, researchers hope a greater number of minor blockers - though each alone not a major defense - would prove a more complex challenge to the fungus.

Borlaug said Ug-99's ability to mutate quickly meant crossbreeding research must continue unabated, while governments and international institutions support stepped-up production and distribution of resistant wheat varieties.

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