

## Yemen identified as “stepping stone” to wheat stem rust’s global spread

MEXICO CITY (CIMMYT) – New research reveals the most likely routes for the spread of new wheat stem rust strains, identifying Yemen as a critical transmission area for the disease’s global spread.

In the [Nature Plants](#) study, scientists from the International Maize and Wheat Improvement Center (CIMMYT), the University of Cambridge and the UK Met Office adapted modeling systems previously used to forecast ash dispersal from erupting volcanoes and radiation from nuclear accidents to predict the spread of stem rust strains.

The [study quantifies for the first time](#) the circumstances – routes, timings and outbreak sizes – under which dangerous strains of stem rust pose a threat, detailing potential scenarios of the disease spreading from Africa through the Middle East and beyond.

Yemen is highlighted as a particular tipping point for stem rust’s global spread, with one scenario estimating a 30 percent chance for transmission to occur in Pakistan or India – home to some of the world’s most critical “breadbasket” regions – if the disease spreads to eastern Yemen.

"From our work, we now believe that if we start to see Ug99 or other new wheat rust strains take hold in Yemen in early spring then action must be taken immediately to mitigate the risk of further spread," [according to](#) the study’s senior author Chris Gilligan, professor at Cambridge’s Department of Plant Sciences.

However, the researchers found that the airborne transmission of the disease from East Africa directly to South Asia is highly unlikely, with transmission events possible only on less than one day a year.

The modelling framework created in the study can also be used to analyze any potential new disease strains that might emerge in other geographic areas. The study’s researchers are currently developing an Early Warning System to forecast rust risk in Ethiopia, East Africa’s largest wheat producing country.

[Read the full study “Quantifying airborne dispersal routes of pathogens over continents to safeguard global wheat supply” here.](#)

*Learn more about wheat stem rust and its impact on food security below:*

[Likely scenarios for global spread of devastating crop disease](#)

[CIMMYT scientist cautions against new threats from wheat rust diseases](#)

[RustTracker.org | A Global Wheat Rust Monitoring System](#)