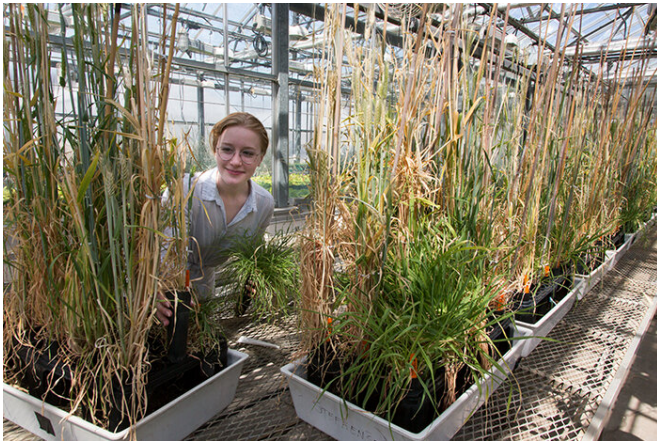


Wild barley from Jordan holds key to stem rust resistance

7 April 2021



Eva Henningsen with wild barley populations. Credit: Eva Henningsen

Stem rust is a devastating disease of cereal crops, including barley, one of the first domesticated crops in agriculture and the fourth most widely grown crop in the world. Barley is unique because it is one of only a few crops that can be cultivated in almost any climate and across a range of elevations, making it economically and nutritionally important.

Stem [rust](#) is one of the biggest threats to [barley](#) production and capable of causing complete crop loss during severe epidemics. And since barley is also used as malt for beer and spirits and feed for animals in addition to food for humans, many industries have a vested interest in making sure barley is protected from [stem rust](#) outbreaks.

One of the most important variants of the stem rust pathogen is Ug99, which first emerged in Uganda in the late 1990s and has since spread across Africa and into the Middle East. Races in the Ug99 lineage pose a great threat to cereal production worldwide and with respect to barley are virulent on more than 95% of the cultivars worldwide. Few

studies have been done to identify resistance in barley to Ug99 races, but a recent study from the University of Minnesota has made advances in this area.

Led by Eva Henningsen, who was an [undergraduate student](#) at the time of this research, [plant pathologists](#) at the university turned to a diverse collection of wild barley and discovered several accessions from Jordan that exhibited a high level of stem rust resistance. They then hybridized these wild accessions and, in a significant discovery, found that a single dominant gene, which they designated *Rpg7*, was responsible for this resistance.

"This gene will be a valuable addition to breeding programs," explained Brian Steffenson, one of the plant pathologists involved with this research. "Given that the resistant wild barley accessions were discovered in Jordan, this research will also provide clues as to where one might possibly identify additional sources of stem rust resistance."

More information: Eva Henningsen et al, *Rpg7: A New Gene for Stem Rust Resistance from Hordeum vulgare ssp. spontaneum*, *Phytopathology*® (2020). [DOI: 10.1094/PHYTO-08-20-0325-R](#)

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