Minimizing stripe rust of wheat, *Puccinia striiformis* f. sp. tritici, by an integrated pest management strategy

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Yellow (stripe) rust, caused by the fungus *Puccinia striiformis* f.sp. *tritici*, is on the rise. For some years, new races occur in Germany and infest not only wheat, but also triticale. In order to prevent further spread of yellow rust, resistant varieties are essential. To minimize the infestation, we analyse a novel approach of integrated pest management in a project funded by BMEL. The aims of this project are (1) monitoring virulences, pathotypes and diversity of German Yr populations, (2) testing the sensitivity of Yr populations to the most common fungicides, (3) identifying race-specific resistance genes in new wheat germplasm and (4) selecting new, durable adult plant resistances by biotechnological methods.

In 2014, the monitoring of the German Yr population revealed that the Warrior race is present in 69% of the samples. This race, first detected in 2011, spreads in Europe and infests wheat and triticale. Our virulence analysis suggest that only a few monogenic resistances remained effective (*Yr 5, 8, 10, 15, 24*) in Germany. We developed a miniaturized test system to investigate the fungicide sensitivity of the German Yr populations. New races and climate changes are the reasons for the need of durable adult-plant resistances. We analysed four selected wheat populations and the results of field tests suggested a wide range of genetic variation. These populations will be genotyped on a 15K Infinium wheat chip to map the positions of new durable resistance genes. Genetic control of Yr by effective adult-plant resistances will offer a cost effective and environmental-friendly strategy to reduce losses in wheat production.