Practice Abstract # 2

Wheat Rust disease surveillance in the Value for Cultivation, Use, and Sustainability (VCUS) Network

Problem statement:

Despite being highly epidemic, three rust diseases of wheat: yellow rust (YR), stem rust (SR) and leaf rust (LR), may be controlled by growing resistant varieties as part of an integrated pest management (IPM) framework. But the emergence of new pathogen variants may overcome previously effective resistance genes, giving rise to significant losses and compounding the potential to become problematic under future climate change scenarios.

Solution:

With a focus on changes in host susceptibility and pathogen variability, this assessment of rust populations will lead to a better understanding of significant new races whether they have evolved within Europe or are incursions of exotic strains.

VCU partners at experimental and breeding sites involved with IPMorama are invited to contribute to the structured disease surveillance and pathogen monitoring of wheat rust diseases in Europe. This collection of data will build upon the database developed and prototyped by RustWatch with partners from AU, INRAE and GEVES. Disease will be scored and used as an indicator of the disease pressure in each environment and crop season, which will feed into the validation of weather-based models.

Isolates sampled from a set of 12 differential cultivars will be sent for characterization of race or genotype.

Funded by the European Union

This project has received funding from the European Union's Horizon Europe research and innovation programme. Associated country partners are funded by SERI & UKRI. However, the views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation

Federal Department of Economic Affairs, Education and Research EAER
State Secretariat for Education, Research and Innovation SERI

UK Research and Innovation

Benefits:

The goal is to sample new and emerging genotypes in a structured way and return timely results to facilitate IPM decision making during the same growing season. Access to information on races/genotypes and the distribution patterns of rust pressure will result in the early alert of significant shifts in host susceptibility across the pedoclimatic zones of the EU. Better streamlined IPM systems will promote more robust decision making, helping to reduce the negative impacts of disease in European cropping systems.

Practical recommendations for VCU partners: Connect. Score. Sample.

1. **Connect with Wheat Rust Toolbox**

   Login to the Toolbox and get access to your trial webform for reporting

2. **Enter visual score**

   Rate the severity of infected differential cultivars 2-3 times during the season.

3. **Send sample to lab**

   Select samples showing symptoms of any of the three rusts, from previously resistant commercial cultivars showing unusual rust susceptibility, or any cultivars with stem rust. Send the samples of YR and SR to the Global Rust reference center in Denmark, and samples of LR to INRAE in France

For more information: [maps and charts]() with results on disease surveillance and pathogen monitoring from VCU trial sites

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation
Federal Department of Economic Affairs, Education and Research EAER
State Secretariat for Education, Research and Innovation SERI
UK Research and Innovation
Funded by the European Union