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MONITORING DISEASE RACE CHANGES IN YELLOW RUST

UKCPVS

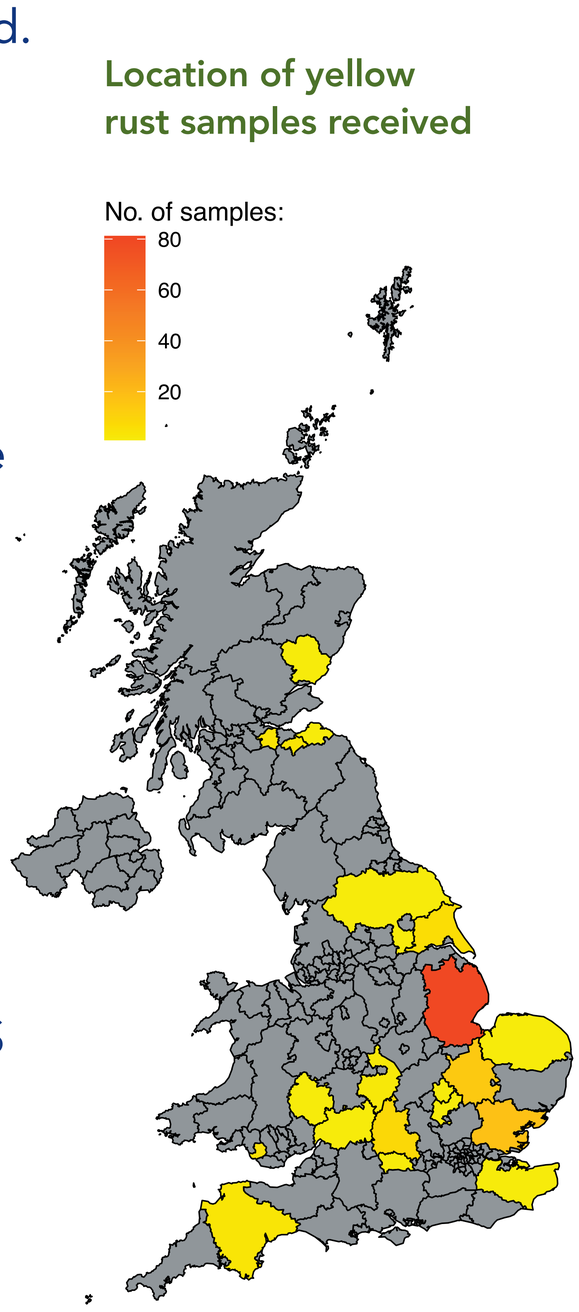
Today, UKCPVS monitors the pathogens causing wheat yellow rust, wheat brown rust and wheat and barley powdery mildew. Much has changed since the Survey began in 1967, most notably with the recent incursion of the Warrior population of *Puccinia striiformis* f.sp. *tritici*, the wheat yellow rust pathogen.

Current situation

In 2021, UKCPVS received more than 190 samples during the main rust and mildew season, including 155 samples of wheat yellow rust. Seven new pathotypes were identified during 2021, with one isolate combining virulence for Yr8 and Crusoe – both of which are rare within the isolates investigated.

Overall, the virulence frequencies for the main yellow rust resistance genes continued to follow the patterns of previous years, with the exception of virulence detected for Yr8 which saw an increase in a number of new pathotypes. In general, varieties should perform as expected, according to their AHDB Recommended List rating, but UKCPVS will be monitoring the yellow rust situation closely throughout the 2022 season.

Location of yellow rust samples received



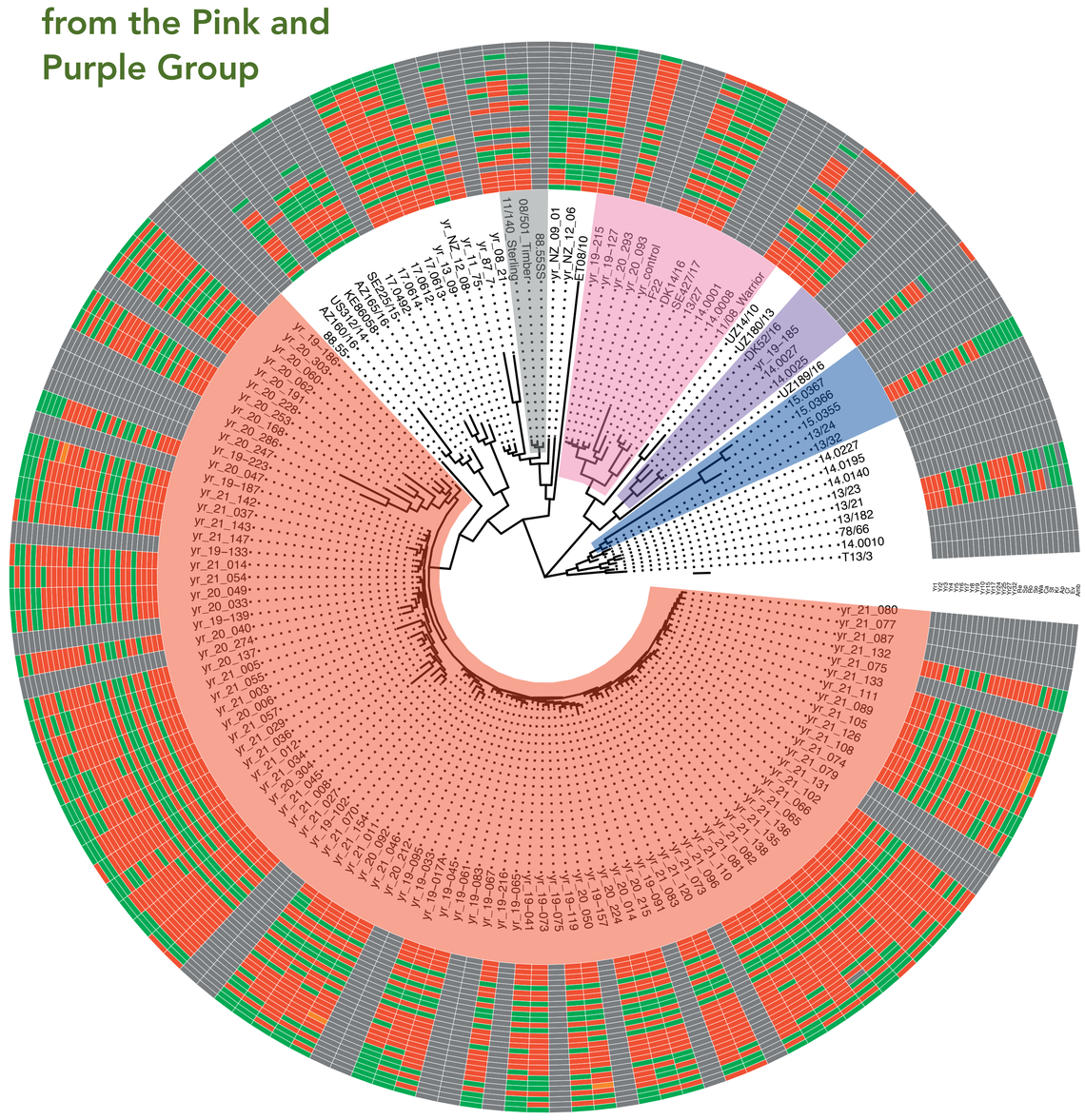
WE NEED YOUR HELP!

Samples from any winter wheat variety can be sent via the FREEPOST UKCPVS service. It is essential that we obtain as diverse a set of samples as possible, from across the country. Rare and unusual races are often found in only sample from one location. Further details on sampling can be obtained from Charlotte Nellist (charlotte.nellist@niab.com/01223 342200).

Majority of UK genotyped isolates belong to the Red Group

UKCPVS has deployed routine genotyping of wheat yellow rust isolates. Genotyping is categorising an individual based on its collection genes. Analyses show that the Red Group [previously known as Warrior 4 or Warrior(-)] has dominated for the past three years. Of the 155 samples received in 2021, 48 were tested and all belong to the Red Group. Whereas previous populations of yellow rust were very similar, the population currently in the UK carries a broad range of virulences in novel combinations.

The preliminary phylogenetic tree in the centre depicts the relationship between isolates and the outside of the circle depicts a heatmap of the presence (red) or absence (green) of virulence on the differential. The Red Group has dominated for the past three years, with only a few isolates detected from the Pink and Purple Group



Funded by AHDB and APHA, and managed by NIAB in Cambridge, the UK Cereal Pathogen Virulence Survey (UKCPVS) has been monitoring cereal rusts and mildews in the UK since 1967. It provides an early warning system to growers and plant breeders of new races of disease that could overcome current variety resistance, and underpins the AHDB Recommended List disease resistance ratings.

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