

Identification of 3 new pleiotropic loci conferring resistance to Leaf Rust and Yellow Rust in wheat on chromosome 2A in "Borlaug 100", Mucy and Mukoe

Project Title: P2028 - Australian Cereal Rust Control Program (ACRCP) - CSIRO Delivering genetic tools and knowledge required to breed wheat and barley with resistance to leaf rust, stripe rust and stem rust

Description of the innovation: New pleiotropic loci conferring resistance to Leaf Rust and Yellow Rust has been identified close to the 2NS/2AS and this is a new region identified in two bi-parental populations and marker development is underway Orizaba displayed near immune seedling response to predominant YR races (Mex 14. 191, Mex 16.04), QTL mapping identified chromosome 2A and suggested likely involvement of Yr1 This is the first report of Yr1 present in CIMMYT germplasm

New Innovation: Yes

Stage of innovation: Stage 2: successful piloting (PIL - end of piloting phase)

Innovation type: Genetic (varieties and breeds)

Geographic Scope: Global

Number of individual improved lines/varieties: 3

Description of Stage reached: The genomic region is identified with flanking markers and KASP marker development is underway

Name of lead organization/entity to take innovation to this stage: CIMMYT - Centro Internacional de Mejoramiento de Maíz y Trigo / International Maize and Wheat Improvement Center

Names of top five contributing organizations/entities to this stage:

- CSIRO - Commonwealth Scientific and Industrial Research Organisation

Milestones: No milestones associated

Sub-IDs:

- 24 - Increased genetic diversity of agricultural and associated landscapes
- 45 - Increased capacity for innovations in partner research organizations
- 40 - Increased capacity of partner organizations, as evidenced by rate of investments in agricultural research

Contributing Centers/PPA partners:

- CIMMYT - Centro Internacional de Mejoramiento de Maíz y Trigo / International Maize and Wheat Improvement Center

Evidence link:

- <https://doi.org/10.1016/j.cj.2021.07.004>

Deliverables associated:

- D31671 - CSIRO Delivering genetic tools and knowledge for Australian Cereal Rust Control Program (ACRCP) (<https://www.sciencedirect.com/science/article/pii/S2214514121001604>)

Contributing CRPs/Platforms:

- Wheat - Wheat