Evidences

Study #4434

Contributing Projects:

- P1329 - Crop modeling to simulate the implications of climate change and technological options in WHEAT AFS
- P867 - Rapid development of climate resilient wheat varieties for South Asia using genomic selection
- P2179 - Leverage phenomic and genomic data from new wheat climate-resilience project
- P1667 - Rapid development of climate resilient wheat varieties for South Asia using genomic selection
- P1319 - An Integrated Approach to Identify and Characterize Climate Resilient Wheat for the West Asia and North Africa Region
- P1327 - Building foresight portfolio for WHEAT AFS, including synthesis, gap analysis and new studies, as input in conducting priority setting for WHEAT AFS
- P881 - Scaling breeding and agronomic management for increasing wheat productivity and adaptation to climate change causing rising temperatures and water scarcity in South Asia

Part I: Public communications

Type: Other MELIA activity

Status: Completed

Year: 2021

Title: Wheat breeding for new traits is a promising climate change adaptation option. Water availability and Nitrogen stress limit potential benefits

Commissioning Study: CRP

Part II: CGIAR system level reporting

Links to the Strategic Results Framework:

Sub-IDOs:

- Reduced smallholders production risk
- Reduce pre- and post-harvest losses, including those caused by climate change

Is this OICR linked to some SRF 2022/2030 target?: Yes

SRF 2022/2030 targets:

- # of more farm households have adopted improved varieties, breeds or trees

Description of activity / study: Climate change is projected to decrease global wheat production by −1.9% by mid-century. The most negative impacts on wheat yield are projected to affect developing countries in tropical regions. The model ensemble mean suggests large negative yield impacts for African and Southern Asian countries where food security is already a problem. Yields are predicted to decline by −15% in African countries and −16% in Southern Asian countries by 2050.

Wheat breeding with new traits is a promising climate change adaptation option, but its effect will vary among regions and especially could be limited under rainfed conditions where water and N stress limit benefits of traits for heat tolerance, early vigor, and delayed flowering adaptations. Increased N availability will often be required for new traits to express a higher yield potential. Region-specific adaptations to increasing temperatures and drought will be needed.

Geographic scope:

- Global

Comments: <Not Defined>

Links to MELIA publications:

- https://doi.org/10.1088/1748-9326/abd970