# Read me

# Global wheat yield potential assessment

| File name | Directory | description |
|---|---|---|
| GS_Baseline.xlsx | GS dates | Growth stages at the 34 global locations for the based period simulated with the wheat model SiriusQuality |
| GS_GCM1_RCP4.5.xlsx | GS dates | Growth stages at the 34 global locations for the 2040-2069 period under the future climate scenario RCP4.5 (climate model GFDL-CM3 simulated with the wheat model SiriusQuality |
| GS_GCM1_RCP8.5.xlsx | GS dates | Growth stages at the 34 global locations for the 2040-2069 period under the future climate scenario RCP8.5 (climate model GFDL-CM3) simulated with the wheat model SiriusQuality |
| GS_GCM2_RCP4.5.xlsx | GS dates | Growth stages at the 34 global locations for the 2040-2069 period under the future climate scenario RCP4.5 (climate model GISS-E2_R) simulated with the wheat model SiriusQuality |
| GS_GCM2_RCP8.5.xlsx | GS dates | Growth stages at the 34 global locations for the 2040-2069 period under the future climate scenario RCP8.5 (climate model GISS-E2_R) simulated with the wheat model SiriusQuality |
| GS_GCMK_RCP4.5.xlsx | GS dates | Growth stages at the 34 global locations for the 2040-2069 period under the future climate scenario RCP4.5 (climate model HadGEM2-ES) simulated with the wheat model SiriusQuality |
| GS_GCMK_RCP8.5.xlsx | GS dates | Growth stages at the 34 global locations for the 2040-2069 period under the future climate scenario RCP8.5 (climate model HadGEM2-ES) simulated with the wheat model SiriusQuality |
| GS_GCMO_RCP4.5.xlsx | GS dates | Growth stages at the 34 global locations for the 2040-2069 period under the future climate scenario RCP4.5 (climate model |

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| | | MIROC5) simulated with the wheat model SiriusQuality |
| GS_GCMO_RCP8.5.xlsx | GS dates | Growth stages at the 34 global locations for the 2040-2069 period under the future climate scenario RCP8.5 (climate model MIROC5) simulated with the wheat model SiriusQuality |
| GS_GCMR_RCP4.5.xlsx | GS dates | Growth stages at the 34 global locations for the 2040-2069 period under the future climate scenario RCP4.5 (climate model MPI-ESM-MR) simulated with the wheat model SiriusQuality |
| GS_GCMR_RCP8.5.xlsx | GS dates | Growth stages at the 34 global locations for the 2040-2069 period under the future climate scenario RCP8.5 (climate model MPI-ESM-MR) simulated with the wheat model SiriusQuality |
| CropNtoMaximizeYield_30yrsAve.RDS | Simulations | Calculated simulated plant and soil responses at different N applicate rates:<br>N450: for N fertlizer rate of 450 kg N/ ha<br>UL: for unlimited N supply fao.dose: for national N applicate rate<br>fao.yield: for simulated gain yield equal the national grain yield (interpolated on simulated yield vs. simulated N fertilizer rate)<br>current.dose: for national N fertilizer use for wheat<br>opt: At N fertilizer rate that maximize simulated grain yield<br>opt.gpc; At N fertilizer rate that maximize simulated grain yield with a minimum protein concentration of 12%<br>opt.N: At N fertilizer rate that maximize simulated grain yield for standard cultivar<br>opt.gpc.N: At N fertilizer rate that maximize simulated grain yield with a minimum protein concentration of 12% for standard cultivar |
| merged summary_Step01(formated).RDS | Simulations | Simulation results for the Step 1 of the simulation protocol (unlimited N) |

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| merged summary_Step02(formated) .RDS | Simulations | Simulation results for the Step 2 of the simulation protocol (N response curves) |
| AgMIPWheat4_site description_34_Global_sites.xlsx | Site information | Description of the 34 global sites |
| AgMIPWheat4_Soil_34_Global_sites.xlsx | Site information | Soil information for the 34 global sites |
| AgMIPWheat4_Weather data_34_Global_sites.rar | Site information | Daily weather data for the 34 global sites for the baseline period (1981-2020) and the future period 2040-2069 for the RCP4.5 and RCP8.5 scenarios taken from five global models of the CMIP5 climate model ensemble |
| AgMIPWheat4_variable_description.txt | Metadata | Definition and unit of the reported simulated crop and soil variables |
| Instructions-34 Global sites_N response curve.pdf | Metadata | Simulation protocol for the Step 2 (N response curves) |
| Instructions-34 Global sites_Step1 | Metadata | Simulation protocol for the Step 1 (unlimited N) |
| Site_codes__coordinates_national_yield_fertilizer_use.text | Metadata | Code, coordinated, national aggregated grain yield and N fertilizer use for wheat for the 34 global locations |