All data are organised into two folders according to the species and then into the following folders according to measurement types:

* A-ci response curves
* Chlorophyll fluorescence
* Hyperspectral reflectance
* Leaf area (Barley only)
* Light saturated gas exchange and AQ curves
* Percent C, N and isotopes
* Specific leaf area
* Leaf width (Maize only)

Each folder contains a .csv file for each year containing the traits associated with the above measurement types. The number of traits in each file will vary according to measurement type and these are listed below with further details. Each file is organised by Plot and Repeat. In general, there should be three repeats per plot and 640 plots.

Traits associated with the A-ci curves and the percent CN and isotopes were not measured on all 640 plots. You can query the reference files in the shared folder to see which plot belongs to which genotype (one for each year for each species). Each genotype is represented by two plots.

The raw A-ci curve and AQ data have a column called “Flag\_removal”. Here, there is an “x” matching rows where I think you should remove data based on my visual inspect of all curves.

Below is a description and notes of all the traits for each species.

**Barley:**

**ACi response curves:**

*Here you have the fitted parameters and the raw data used to model those parameters from both 2021 and 2022. The raw data includes a timestamp which you can use to calculate the time between each measurement.*

* Vcmax (Maximum rate of carboxylation by rubisco)
* Jmax (Maximum rate of electron transport for RuBP regeneration)
* TPU (Triose phosphate limitation)
* Asat (photosynthesis at saturating light and CO2)
* gs (stomatal conductance at saturating light and CO2)
* A400 (photosynthesis at saturating light and 400 CO2)
* SL (stomatal limitation)

**Chlorophyll fluorescence:**

*Here you have the fitted parameters from the exponential models describing NPQ relaxation and induction and phiPSII recovery. Data from both years are here.*

* NPQ induction amplitude (NPQ\_ind\_amp)
* NPQ induction rate (NPQ\_ind\_rate)
* NPQ relaxation amplitude (NPQ\_rel\_amp)
* NPQ relaxation rate (NPQ\_rel\_rate)
* NPQ relaxation residual (NPQ\_rel\_res)
* phiPSII induction amplitude (phiPSII\_ind\_amp)
* phiPSII induction rate (phiPSII\_ind\_rate)
* phiPSII induction residual (phiPSII\_ind\_res)
* NPQ induction slope from linear model (NPQ\_ind\_linear)
* Maximum NPQ (maxNPQ)
* Final NPQ (endNPQ)
* Final phiPSII (endFvFm)
* Initial Fv/FM (initialFvFm)

**Hyperspectral Reflectance:**

*Here you have percent reflectance at each wavelength from 350-2500 nm from 2022 only. We had issues with generating these data in 2021. We may be able to correct these data in the future, but for now we are only sharing data from 2022.*

**Leaf area:**

*Here you have the total leaf area from the second leaf. This is the same area used to calculate specific leaf area.*

**Light saturated gas exchange and AQ curves:**

*Here you have the light saturated rates of gas exchange and the raw AQ curve data. A different protocol was used between the two years here. In 2021 we measured gas exchange at saturating light and after a light drop to 200, so here you have A, gs, ci, and iWUE at saturating light and at 200*. *In 2022, we just measured light saturated gas exchange but also did an AQ curve*. *I have not yet fitted the AQ curves to generate phiCO2, Resp, curvature factor, etc., but I will soon.*

**Percent C, N and isotopes:**

*Here you will have data on % C and N, the C:N ratio, d13C, and d15N. This will hopefully start to arrive with you in the summer*.

**Specific leaf area:**

*Here you have specific leaf area measured on the entire second leaf*.

**Maize:**

**ACi response curves:**

*Here you have the fitted parameters and the raw data used to model those parameters from 2021. The raw data now includes a timestamp which you can use to calculate the time between each measurement. The 2022 data will be coming soon, I need extra time to go through these.*

* Vpmax (Maximum rate of carboxylation by PEPc)
* Vmax (Asymptote of four-parameter hyperbolic function)
* A (photosynthesis at saturating light and 400 CO2)
* Gsw (stomatal conductance at saturating light and 400 CO2)
* Vpmax/Vmax ratio
* iWUE (A/Gsw)

**Chlorophyll fluorescence:**

*Exactly as for barley.*

**Hyperspectral Reflectance:**

*Exactly as for barley but data is available from 2021 and 2022.*

**Leaf width:**

*The width of the measured leaf at its widest point. This is supposedly a good proxy for WUE in C4s.*

**Light saturated gas exchange and AQ curves:**

*Here you have the light saturated rates of gas exchange and the raw AQ curve data. In 2022, we did an AQ curve*. *I have not yet fitted the AQ curves to generate phiCO2, Resp, curvature factor, etc., but I will soon.*

**Percent C, N and isotopes:**

*Here you will have data on % C and N, the C:N ratio, d13C, and d15N. At the moment only data from 2021 is available, but 2022 data should be with you in the summer.*

**Specific leaf area:**

*Here you have specific leaf area measured on leaf discs*.