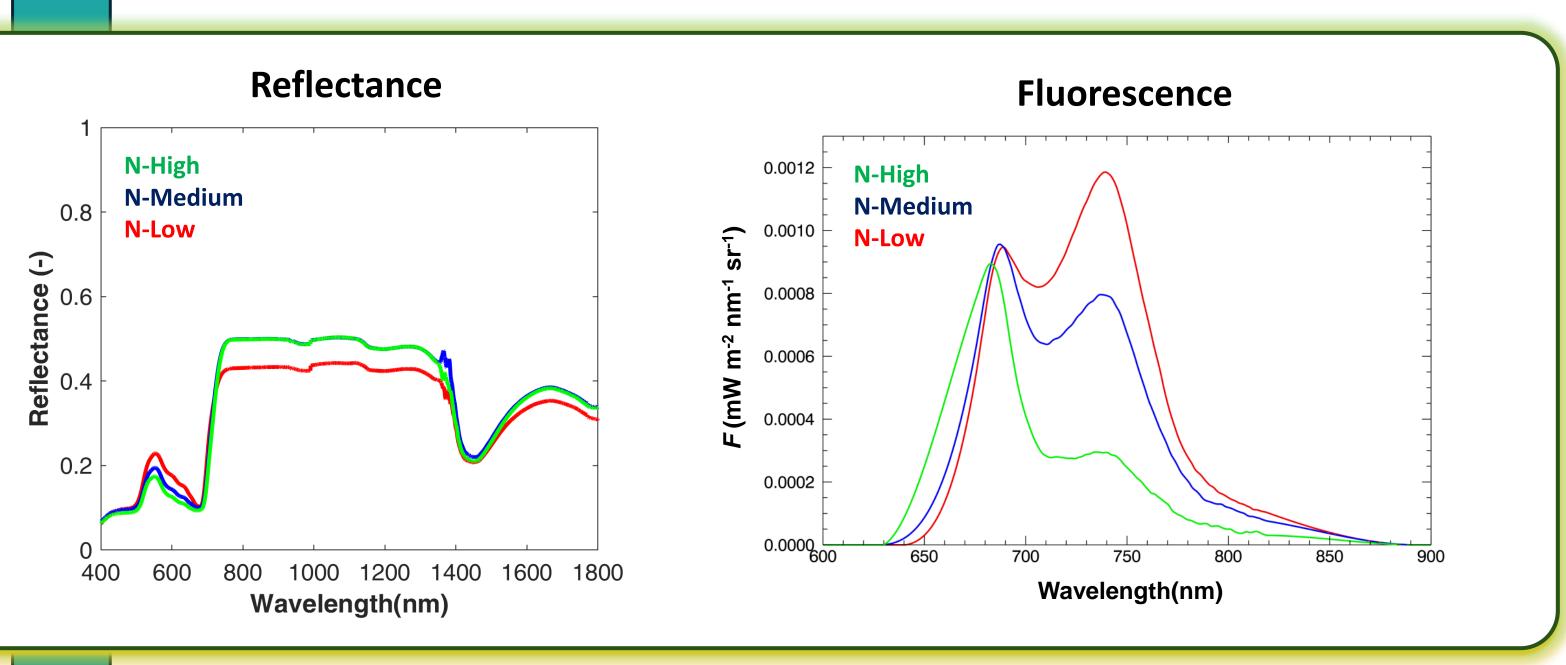
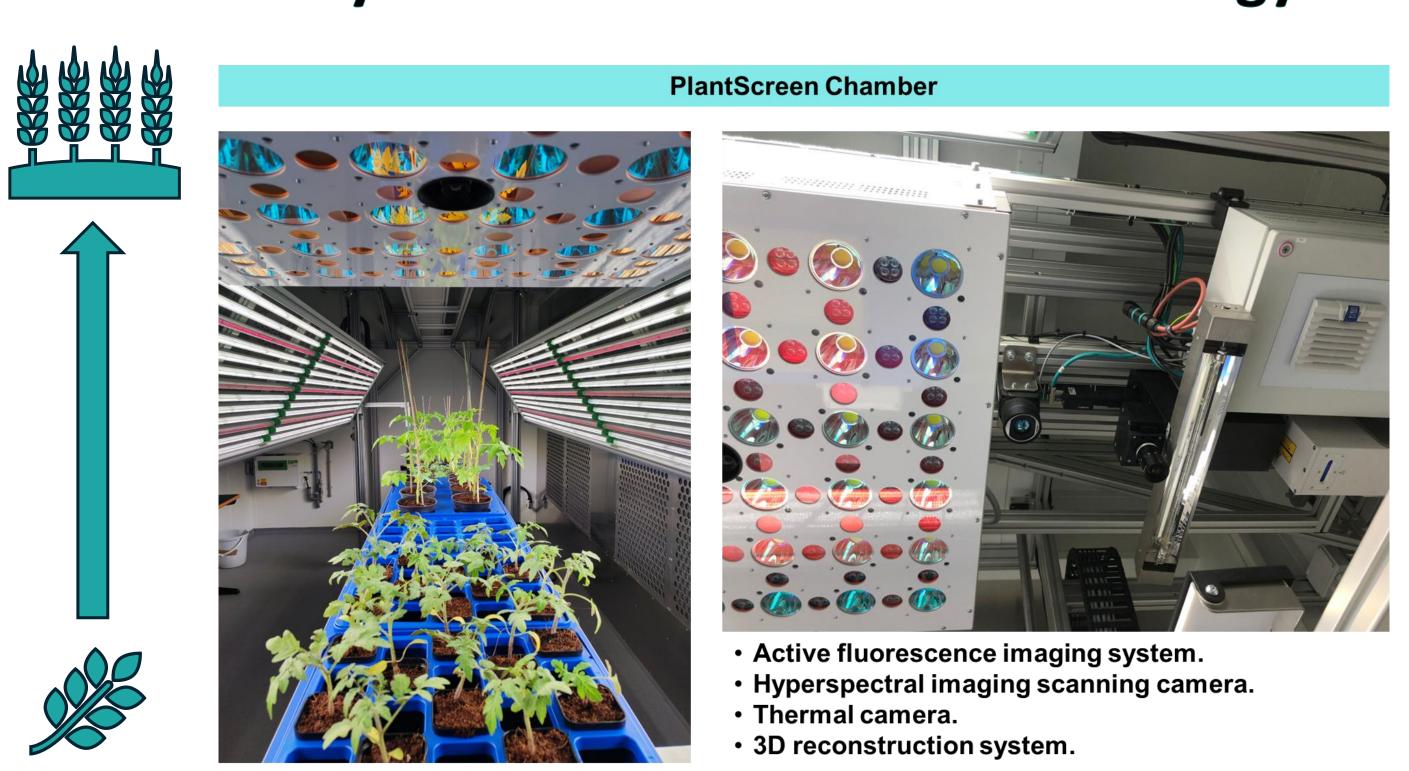
Functional based traits Complex relationship between F and photosynthesis Light damage Light protection Light damage Light USE Light USE 1100 450 **Photosynthetic** 1000 Reflectance **Active Radiation** (PAR) **Photosynthesis** Fluorescence 250 600 Absorbed - Chlorophyll Non-photochemical Quenching (NPQ) 0.1 0.7 0.2 0.7 Photosynthesis efficiency Photosynthesis efficiency Chlorophyll N-Hight | N-Medium | N-Low WellWater | ReWater | Drought **Transmittance** fluorescence (F) \Rightarrow F depends in a first order on APAR and in a second order on NPQ

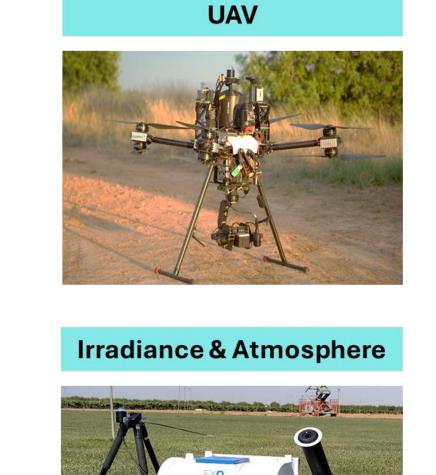
Remote monitoring of vegetation status

- ► Reflected radiance (bands combination or complete spectrum)
 - Vegetation indices: NDVI, PRI, NIRv, EVI.
 - Biophysical traits: fAPAR, LAI, fCover, Pigment content (chlorophyll, carotenoids, xanthophyll's)
 - Functional traits: APAR, Non-photochemical quenching (NPQ).
- Emitted radiance
 - Functional traits: Chlorophyll Fluorescence (F)
- Surface temperature

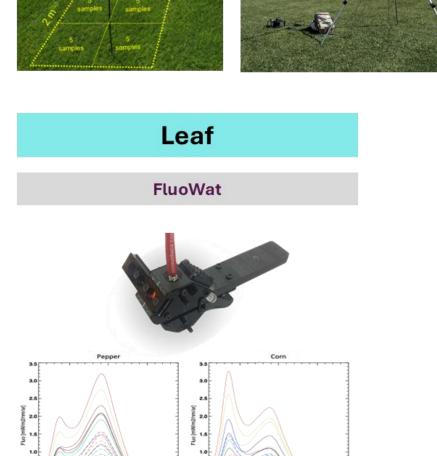


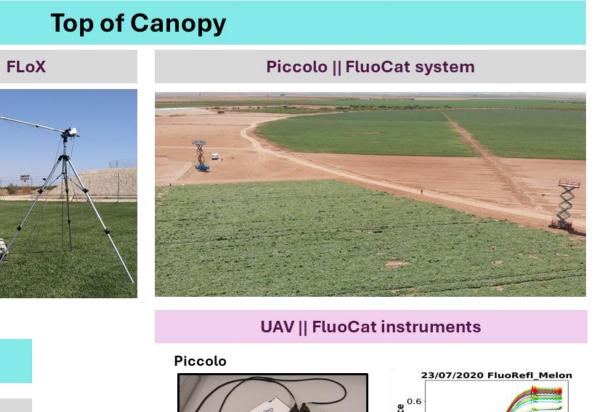
Laboratory and field measurements strategy

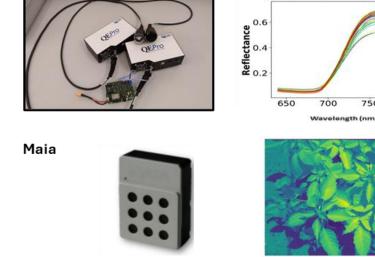




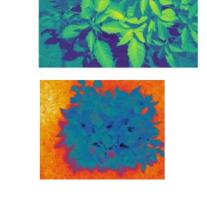
phenotype



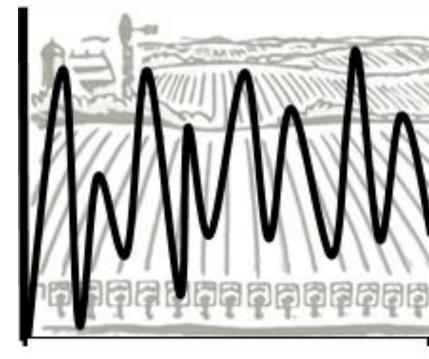




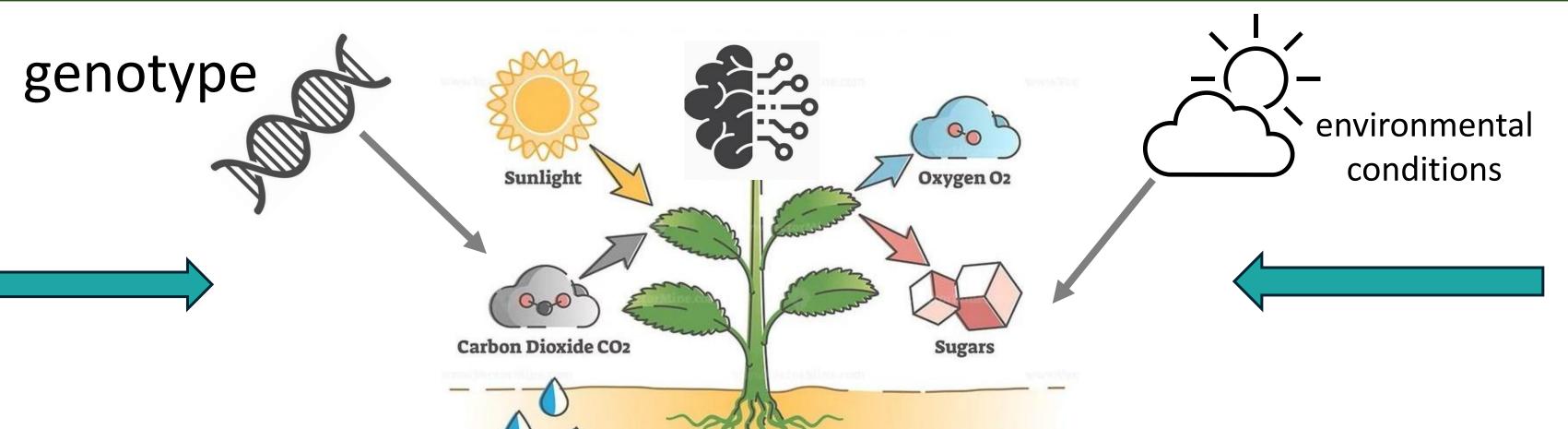


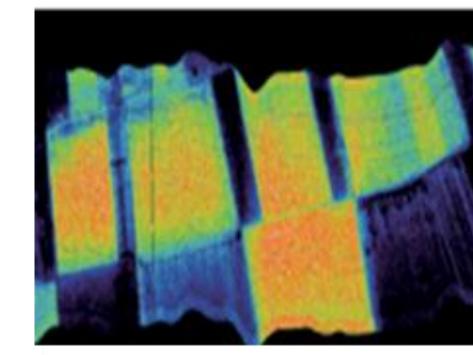






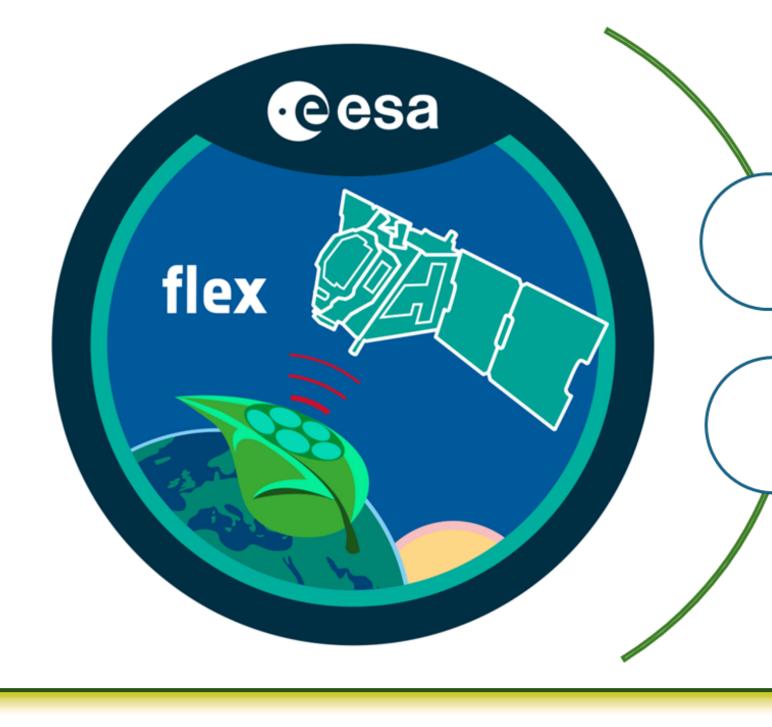
Temporal dynamics





Spatial dynamics

Products



Photosynthesis rate

Early stress detection

