Hypotheses

- (1) Lower transpiration
- (2) Down-regulation of photosynthesis
- (3) Altered requirements for minerals due to changes in enzymes/organic complex requirements
- (4) Mineral dilution
- (5) Inhibition of nitrate assimilation by decreased photorespiration
- (6) Reduction in mineral absorption through the root and changes in root architecture
- (7) Alteration of zinc and iron transporters

Strategies to understand plant nutrient responses to elevated [CO₂]



Phenotypic screens

- 1. Carbon isotope analysis to assess lower transpiration levels.
- 2. Seed and leaf ionome analysis by ICP-MS.

<u>Detailed physiological</u> <u>experiment</u>

- 1. Carbon isotope to assess different transpiration.
- 2. Seed and leaf ionome analysis by ICP-MS.
- 3. Xylem sap ionome analysis to determine mineral flux at different time points.
- 4. Tissue sampling for RNA-Seq analysis of each organ.