

BREAKOUT

“We bred corn to trust us...”

What should we measure?

- N₂O + CO₂ at plant scales.
 - Need at low cost
 - Molecular recognition
 - Conventional IR might work, if on fast platform
 - All sensors work on a three year time scale
 - Also Methane
- Soil Structure Measurements
- Soil nitrate, Carbon & H₂O Measurements
 - Hourly measurements.
- Need the entire carbon balance (NEP). Integrated model.

Instruments

- Ultra Low Field MRI
- GPR drones
- Autonomous underground platforms (earthworms?)
- Small package optical sensors for C, N & P
- Super-cheap eddy covariance
- Build a lab scale microbiome.
- Chlorophyll fluorescence

Team

- Agronomists + Soil Scientist + Engineers + Modelers

Below ground biomass

- Argument about whether correlated with above ground
- 20% accuracy needed
- Depth and root angle may be much more important
 - Angle – 5 to 10 degrees precision
 - Growth rate – cm/days