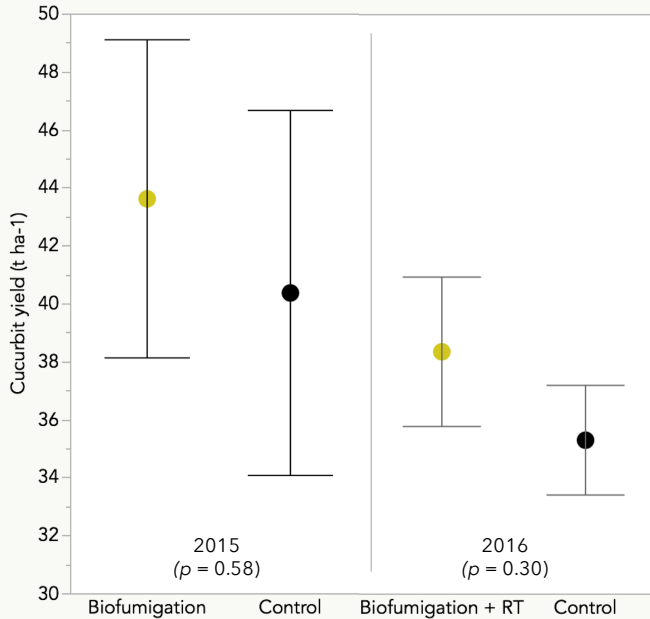


# BIOFUMIGATION, REDUCED TILLAGE, & BATTLING PHYTOPHTHORA ON-FARM

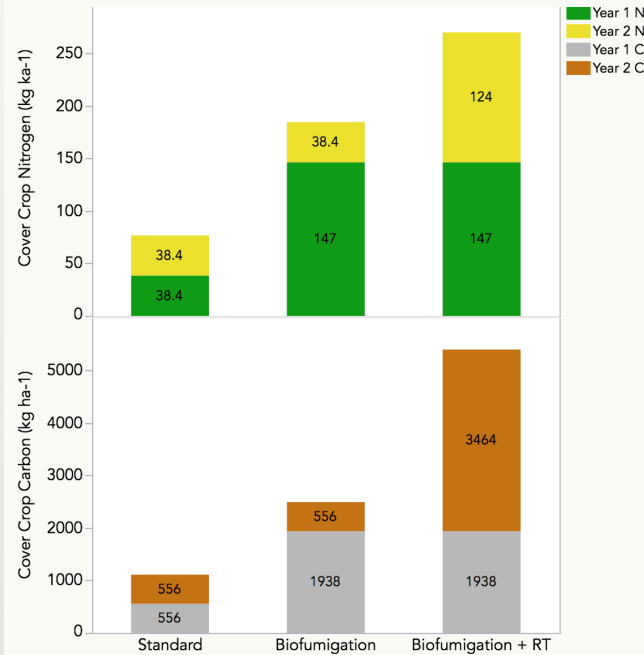


ON-FARM YIELD RESPONSE TO TREATMENT



- Negligible *P. capsici* blight all seasons (dry) & locations
- Both years on-farm: NSD in cucurbit yield response ( $p > 0.10$ ) to treatments
- *LIHREC*- Biofumigation + CT > control; RT treatments NSD from either (weeds or nutrient issue?)

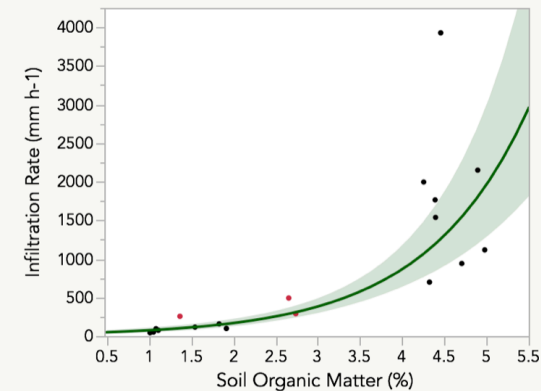
MEAN ABOVEGROUND COVER CROP BIOMASS N AND C RETURNED TO SOILS, BY MANAGEMENT SCENARIO



- 2-yr cumulative biofumigation + RT cover crop biomass returns to soils vs. standard control:
  - ~4.9x more C (5402 kg ha<sup>-1</sup>)
  - ~3.5x more N (270 kg ha<sup>-1</sup>)

- Soil health- largely NSD treatments on ( $p > 0.10$ )
- *LIHREC*- greater soil respiration in NT treatments, lower AWC, infiltration (compaction, incorporated rye?)

ON-FARM SOIL INFILTRATION RATE BY SOIL ORGANIC MATTER CONTENT



- On-farm infiltration rates:
  - 1) Positive relationship with SOM content ( $r^2 = 0.87$ ,  $p > 0.01$ )
  - 2) Negative relationship with soil sand content ( $r^2 = 0.83$ ,  $p > 0.01$ )

# CONCLUSIONS

- Longer-term studies may be needed re:
  - 1) Possible cumulative biofumigation & RT effects
  - 2) Assuring *P. capsici* blight incidence- opportunity to collect evidence!
- Better understanding of *Brassica* cover crop management and in-field biofumigation is in order
- Biof. + RT to help build SOM
  - > improved infiltration rates over time?
- Robust rolled rye mulch: lower fruit/*P. capsici*-infested soil contact?
  - improved RT weed control?

