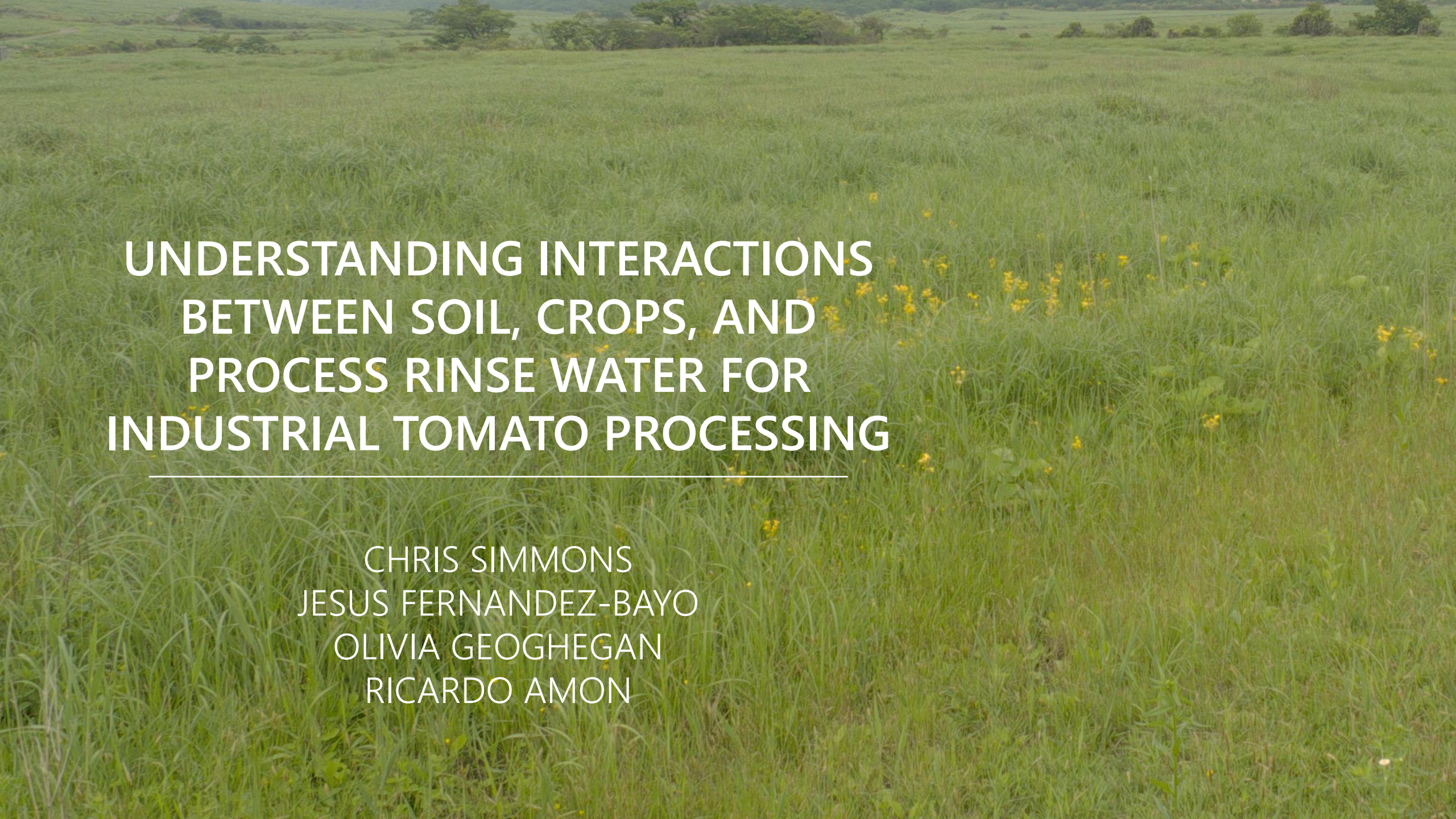




UNDERSTANDING INTERACTIONS BETWEEN SOIL, CROPS, AND PROCESS RINSE WATER FOR INDUSTRIAL TOMATO PROCESSING

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OBJECTIVE

Understand soil, plant and water dynamics in bare and cultivated agricultural soils following application of processing rinse water.

Determine if nitrate and salt are immobilized or transformed as water infiltrates the soil with respect to time and soil depth.

SAMPLED STREAMS

Discharged rinse water and soil from a discharge site were sampled from a volunteer facility in the Sacramento Valley.

Multiple sampling time points:

August 2019
October 2019



WATER SAMPLING

June 2019
September 2019
October 2019



SOIL SAMPLING

DISCHARGED WATER: C, N, P, K

	Total C	Total N	NH4-N	NO3-N	PO4-P	K
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sampled August '19	522.5	44.5	6.7	<0.05	3.3	82.6
Sampled October '19	115	8.0	1.2	<0.05	0.35	15.5

DISCHARGED WATER: SOLUBLE CATIONS

	Ca (Soluble)	Mg (Soluble)	Na (Soluble)	Zn (Soluble)	Cu (Soluble)	Mn (Soluble)	Fe (Soluble)	Ni (Soluble)
	meq/L	meq/L	meq/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sampled August '19	2.1	2.3	3.1	0.04	0.01	1.2	2.1	0.04
Sampled October '19	1.7	1.6	5.0	<0.05	<0.1	0.4	1.4	0.008

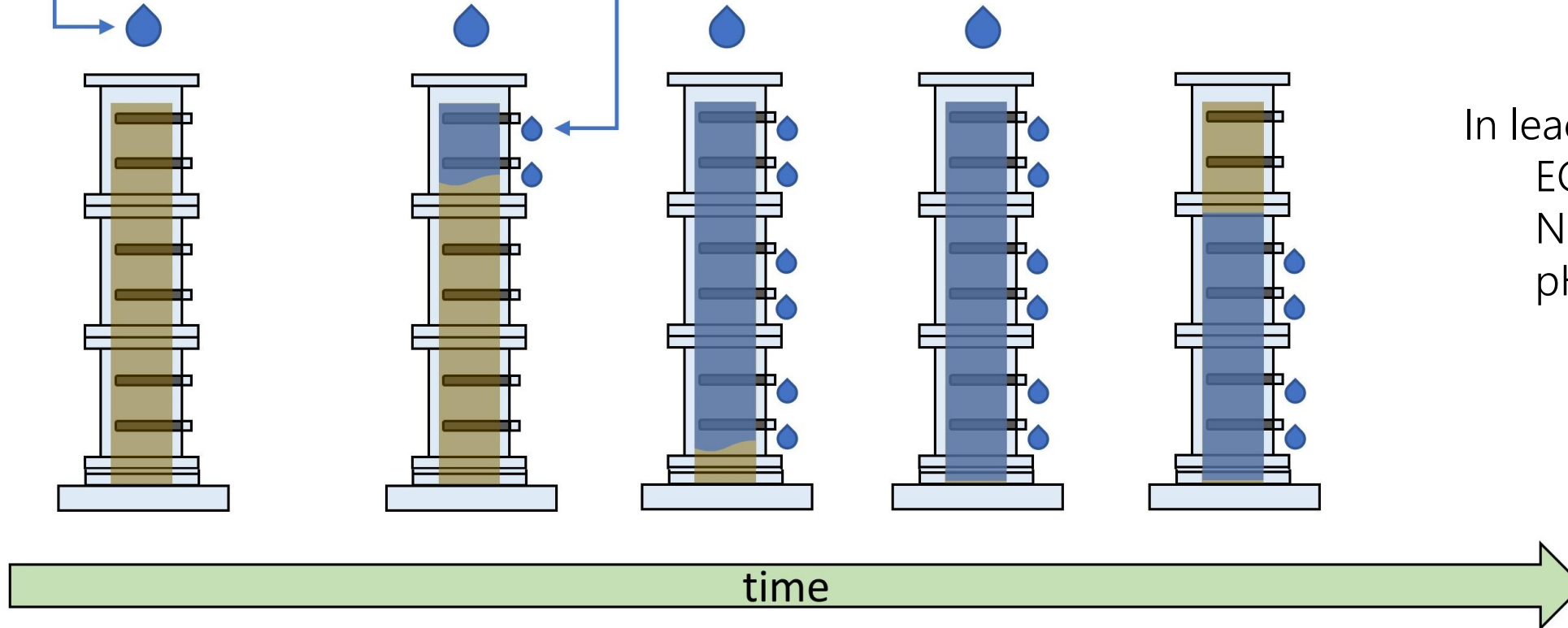
TIME COURSE STUDY

Irrigate soil to
with 225 to 300
mL every 3 to 4
days

Collect samples
as water
infiltrates soil

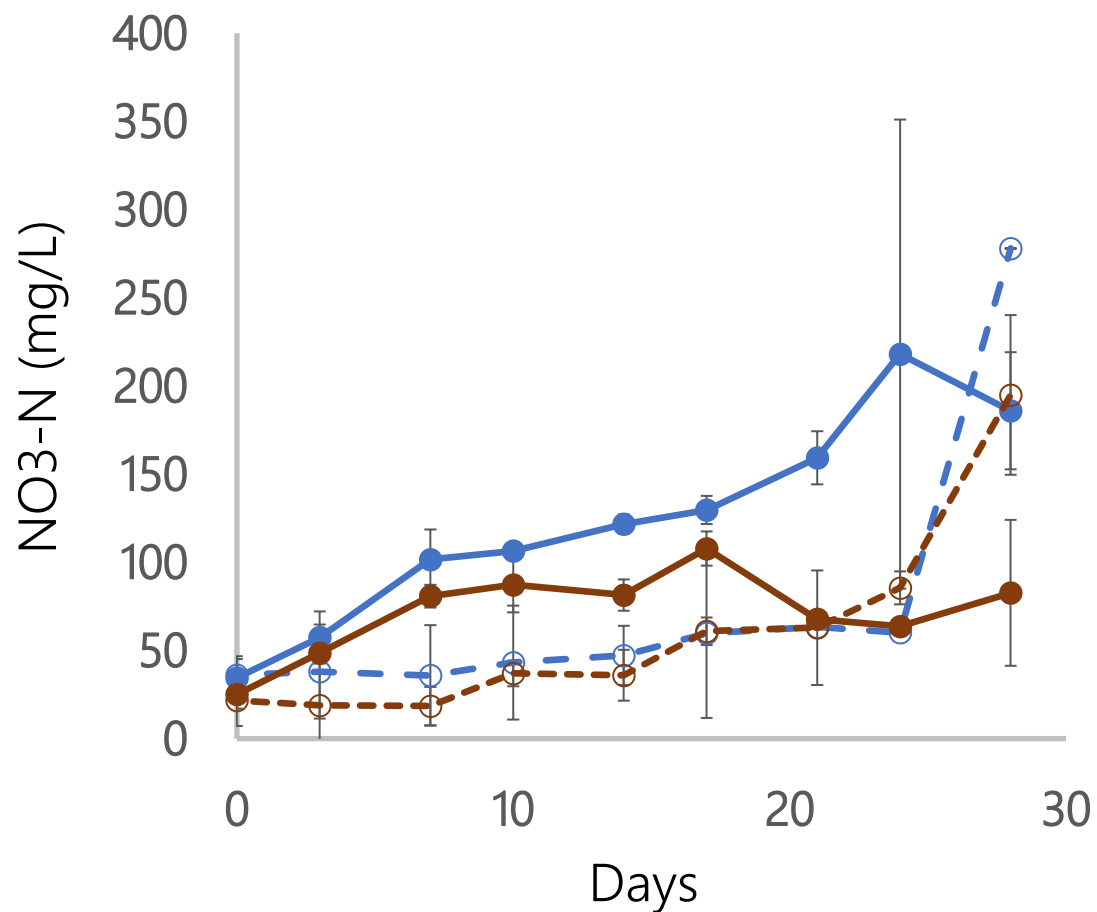
Allow water to infiltrate under
diurnal temperature cycling
(22-36°C) for 1 month

In leachate, measure
EC
NO₃-N
pH

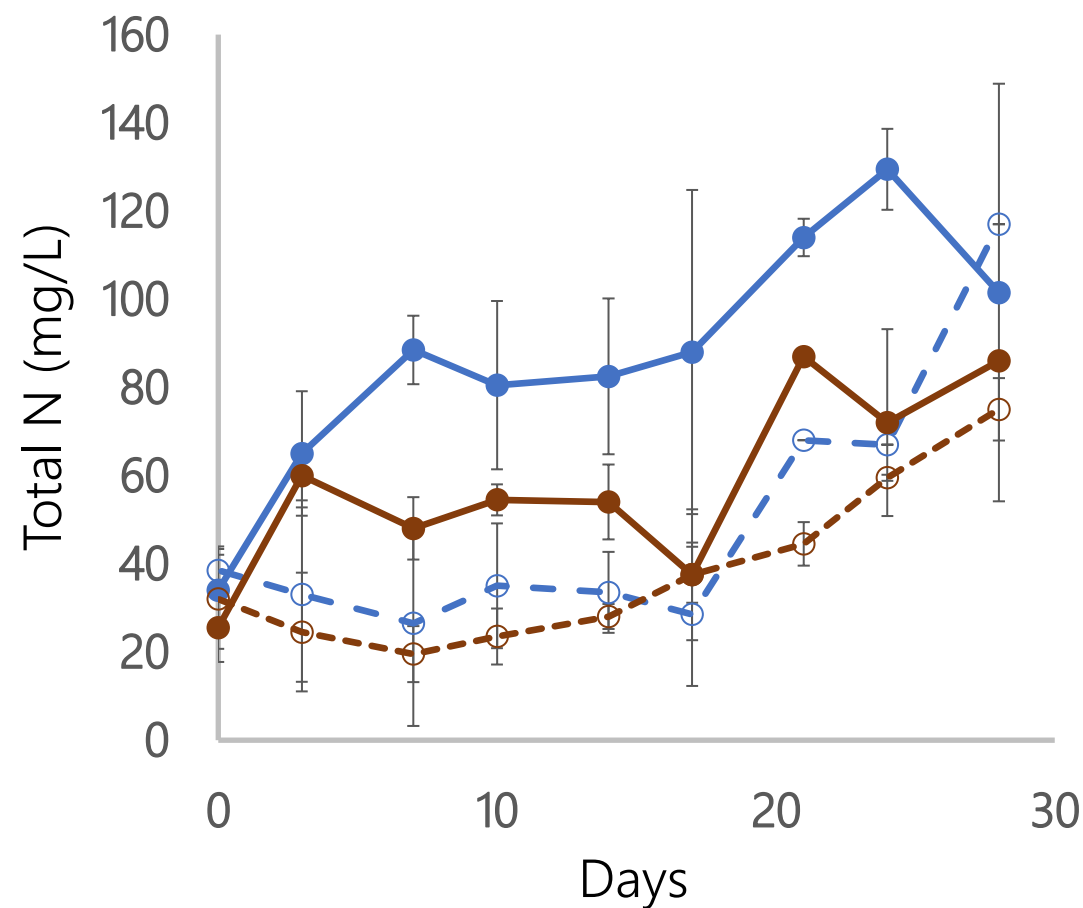


NITRATE AND NITROGEN

- 15 cm depth; control – DI water
- 46 cm depth; control – DI water



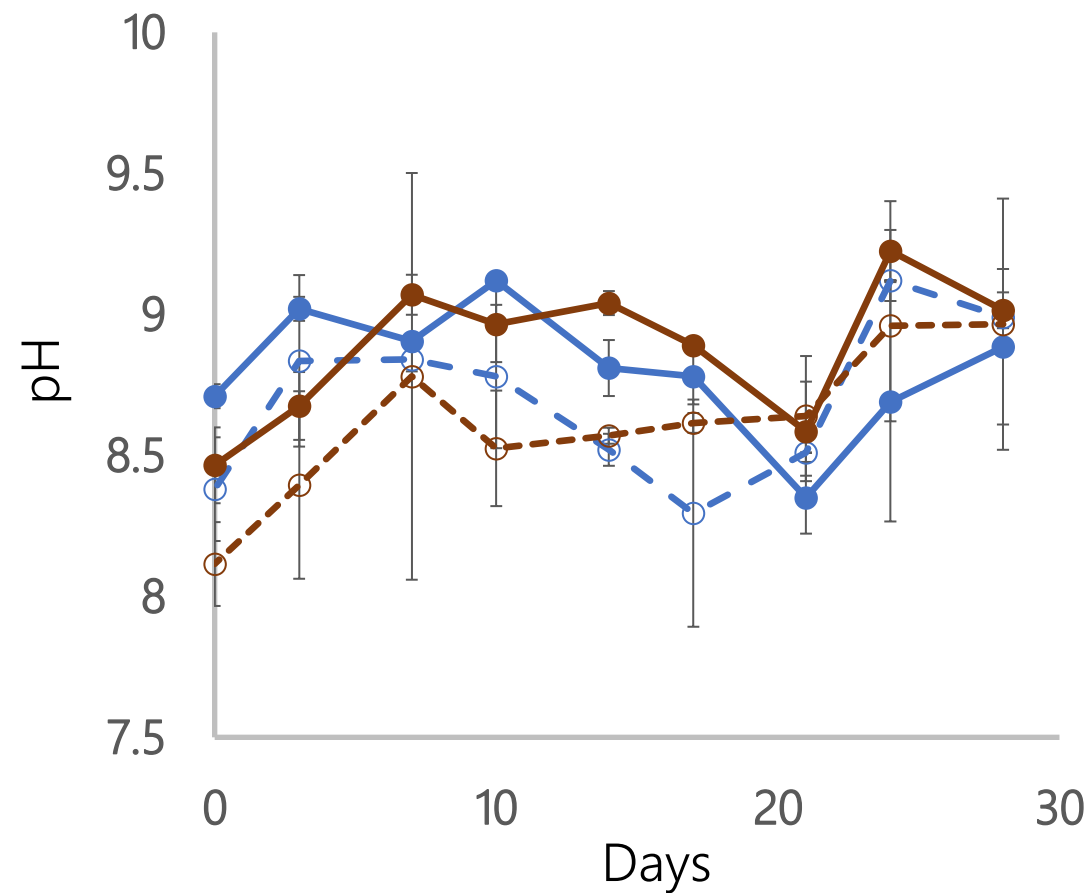
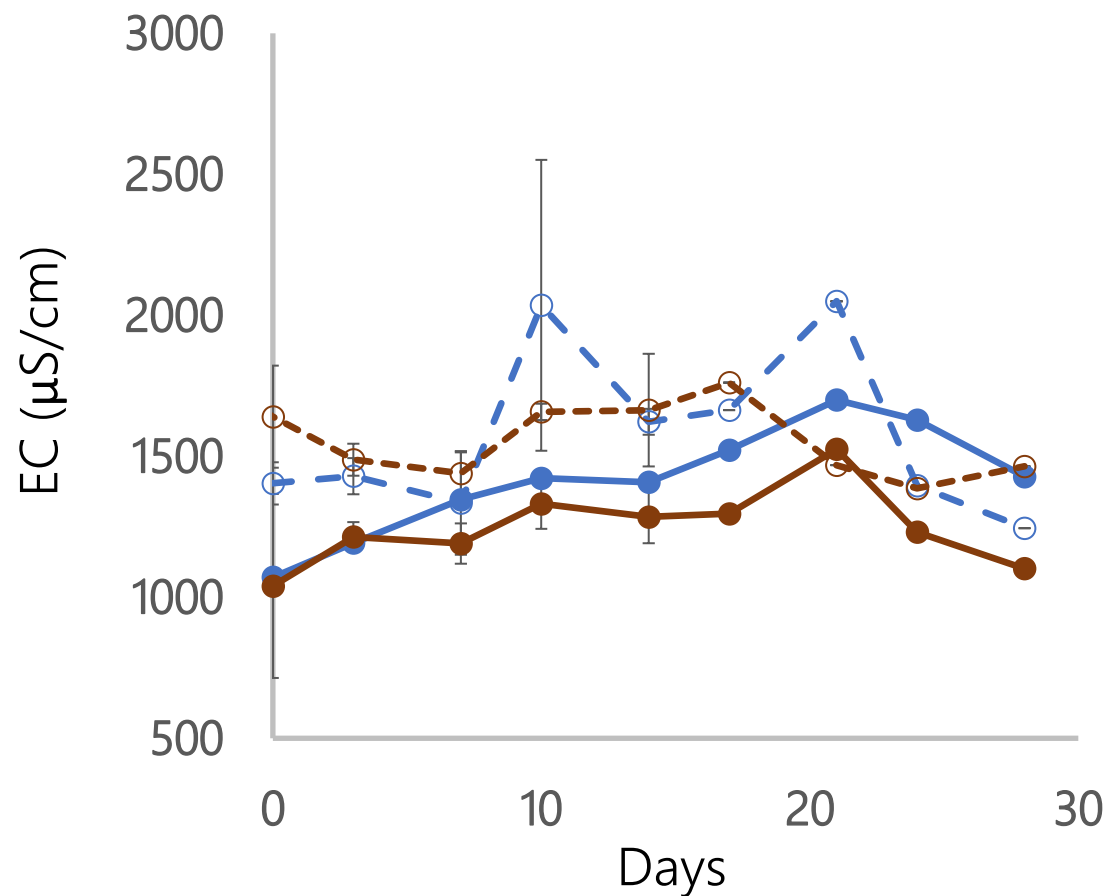
- 15 cm depth; rinse water
- 46 cm depth; rinse water



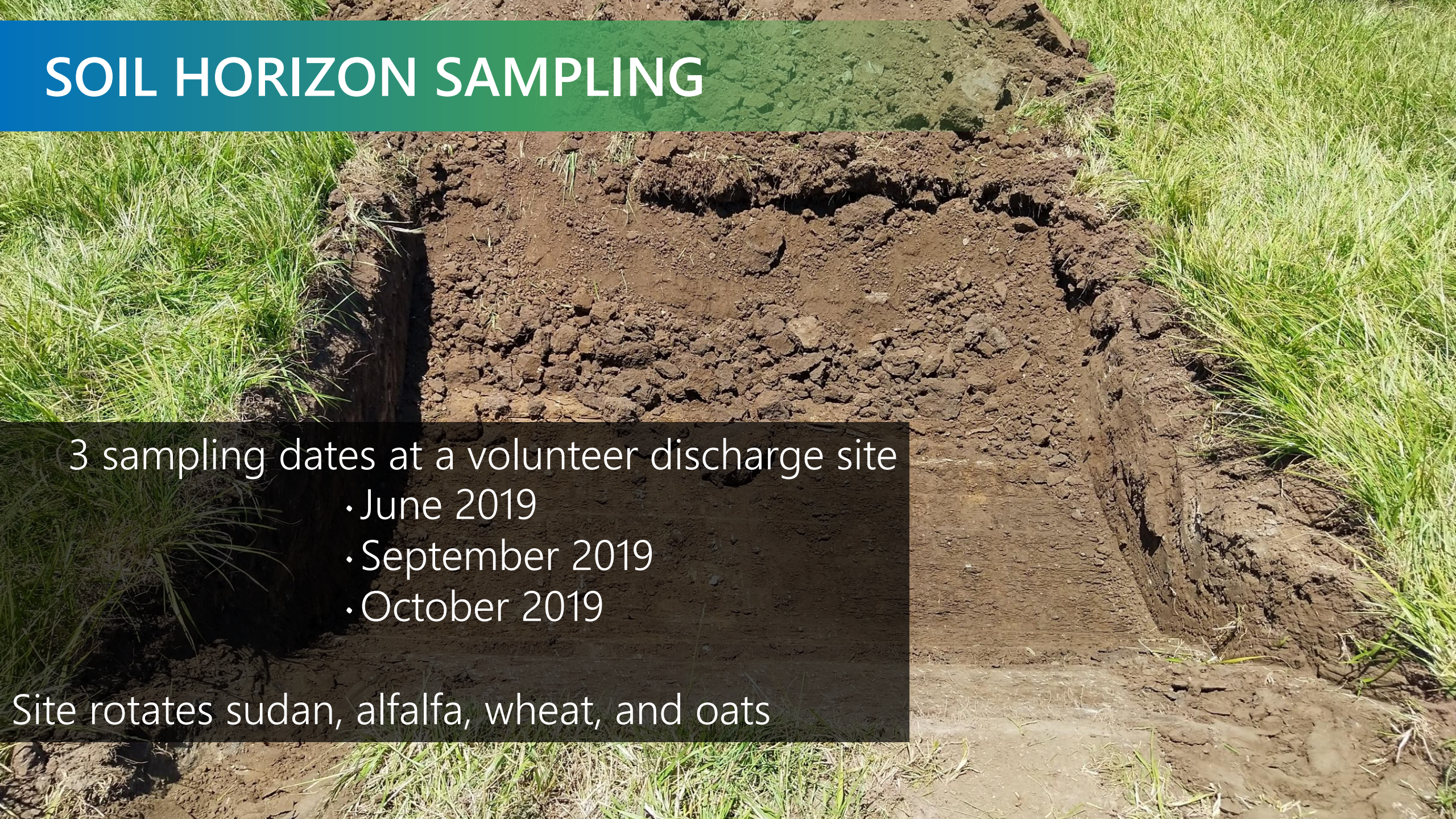
ELECTRICAL CONDUCTIVITY AND pH

- 15 cm depth; control – DI water
- 46 cm depth; control – DI water

- 15 cm depth; rinse water
- 46 cm depth; rinse water



SOIL HORIZON SAMPLING

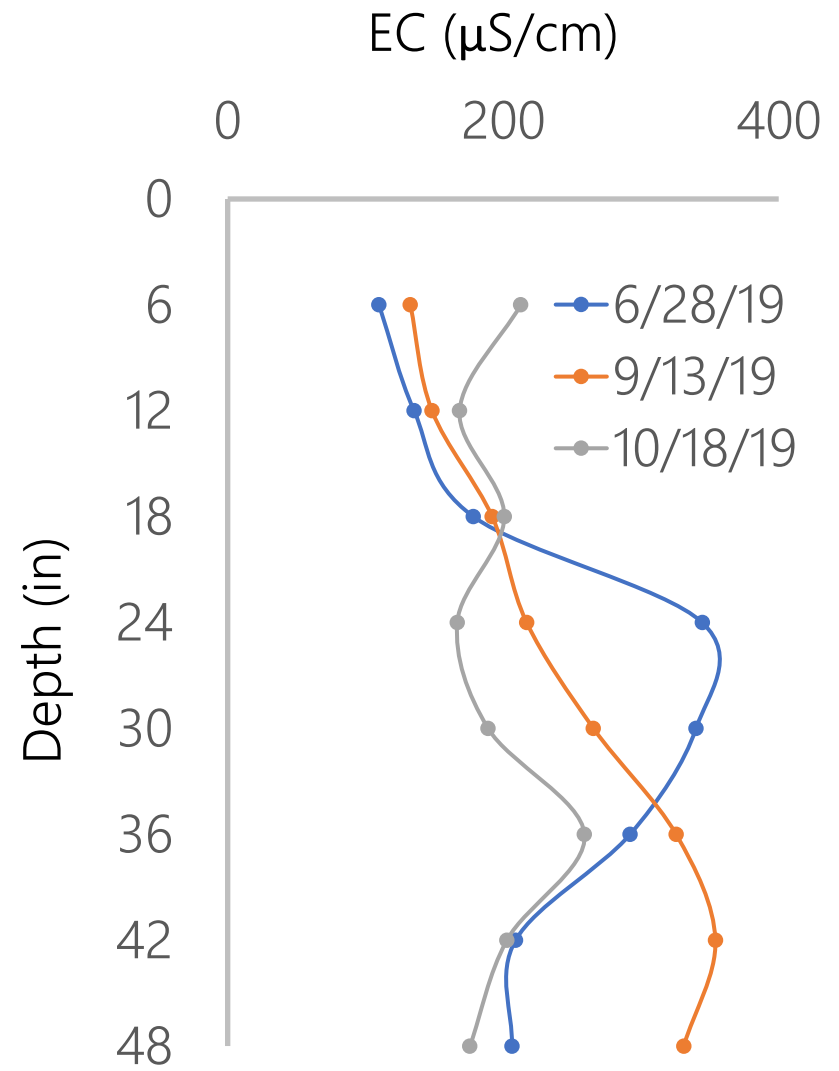
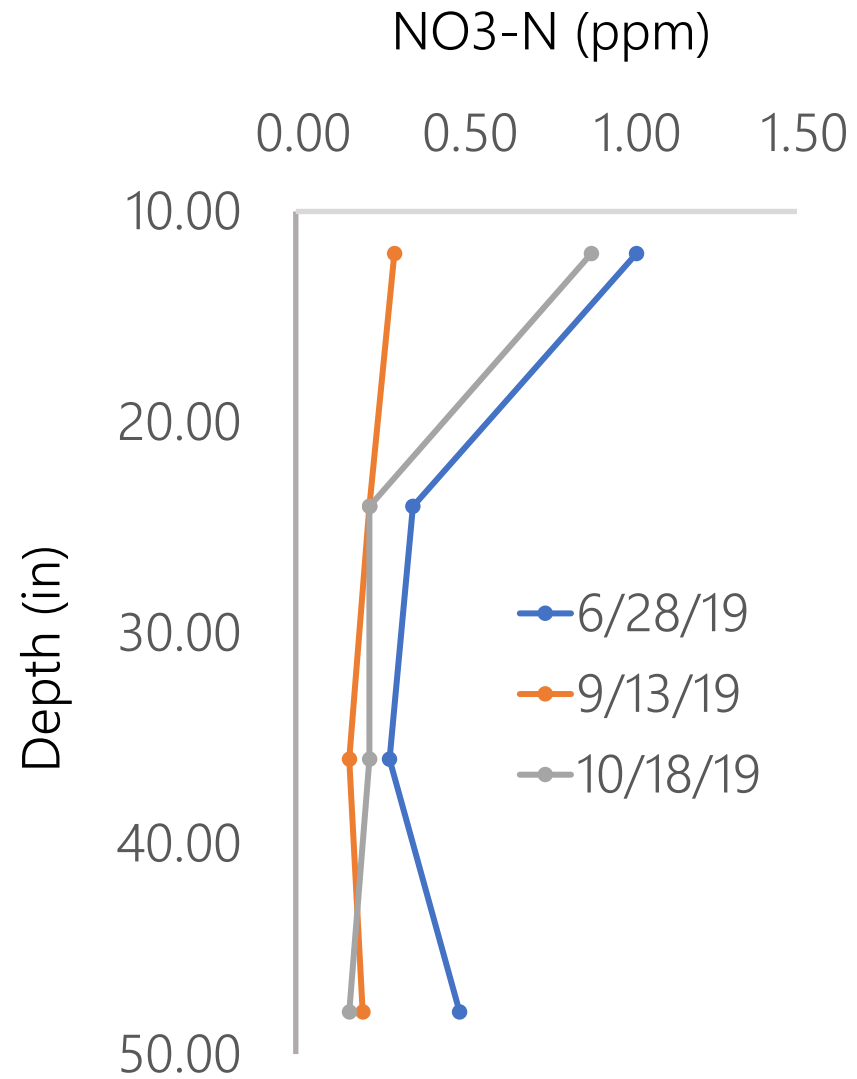


3 sampling dates at a volunteer discharge site

- June 2019
- September 2019
- October 2019

Site rotates sudan, alfalfa, wheat, and oats

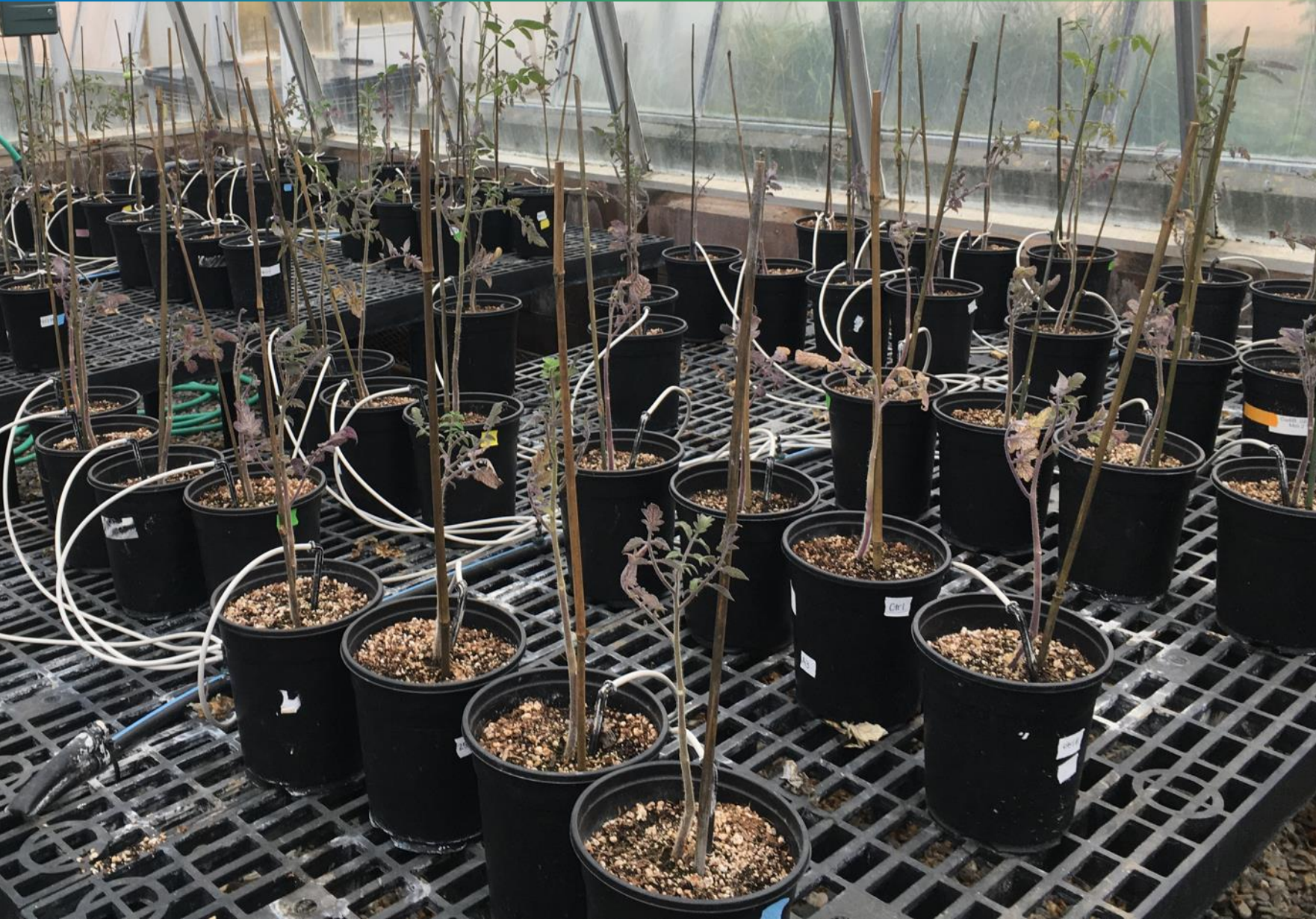
SOIL PROPERTIES



VALORIZING TRAILER SERUM

Continue studying the fertilizer potential of trailer serum as an alternative, value-added management strategy.

TOMATO GROWTH STUDIES



Greenhouse Configuration
80 pots

Table 1

Table 2

Control (0% Trailer Serum)

10% Trailer Serum

25% Trailer Serum

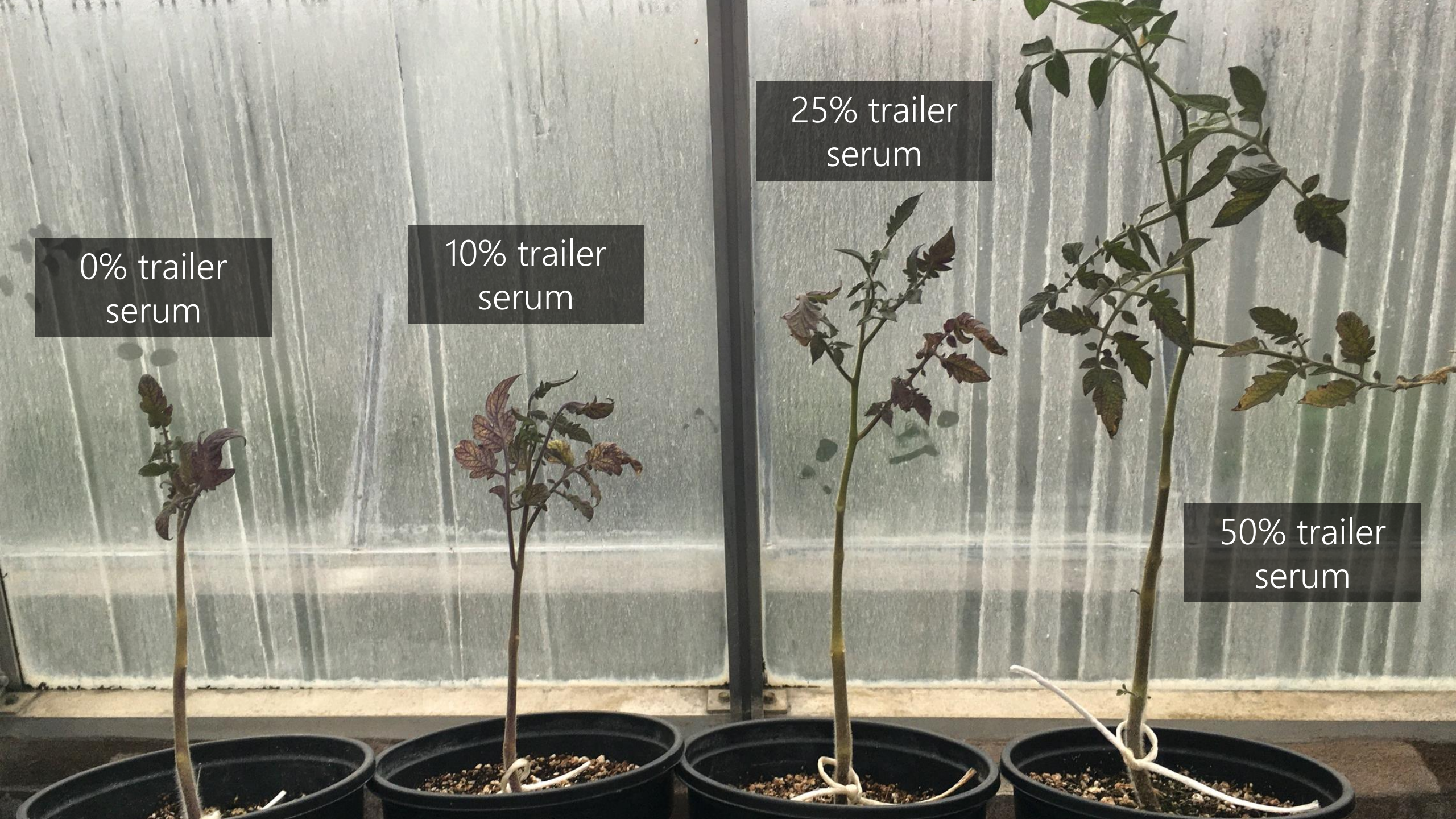
50% Trailer Serum

0% trailer
serum

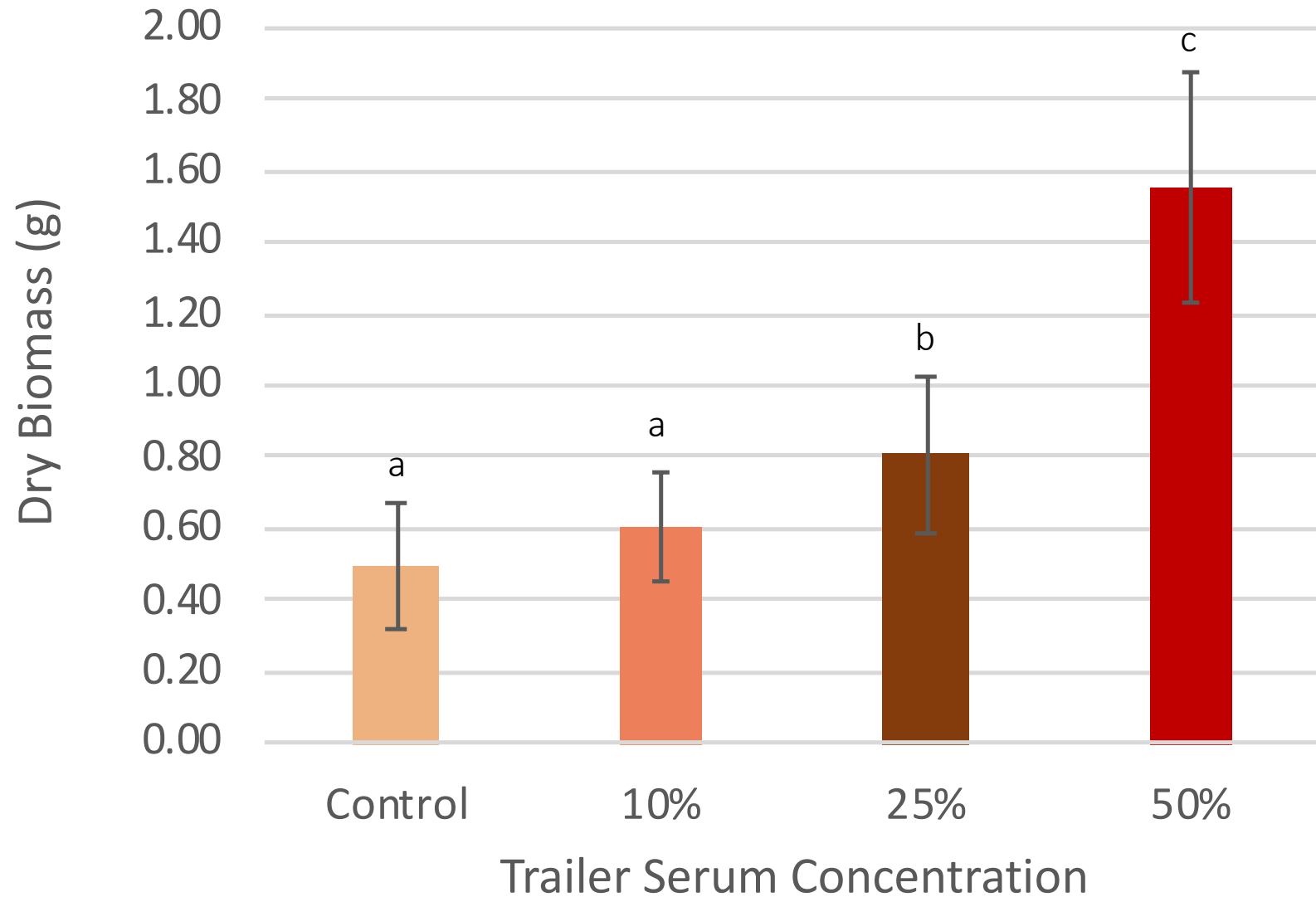
10% trailer
serum

25% trailer
serum

50% trailer
serum



VEGETATIVE BIOMASS



THIS WORK WAS FUNDED BY
California League of
Food Producers



THANK YOU