

UTAH LANDOWNER CONSERVATION RESOURCE

FY 2026 REPI Challenge



BACKGROUND

Conservation Easements maintain open space and prevent further development where they are established. The ongoing management of the easements during ownership and use changes can be challenging to navigate. This resource aims to relieve that challenge.



PRESENTATION OUTLINE

01

BACKGROUND & GOALS

Well managed conservation easements prevent various encroachment threats.

02

MILITARY MISSION

Preventing incompatible development, conserving water, and mitigating the impacts of wildfire.

03

PROJECT PLAN

Collaborate to understand needs and compile relevant information.

04

OUTCOMES

A one stop resource for private landowners following the entire easement journey, aligned with military mission.

BACKGROUND & GOALS

CONSERVATION EASEMENTS

A voluntary agreement between a private landowner and agency that restricts future development.

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Establishing conservation easements are a key strategy in preventing residential and other types of incompatible development near installations

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ECOLOGICAL BENEFIT

Easements can be managed as wildlife habitat, and can contribute to water conservation and wildfire threat mitigation if properly managed.

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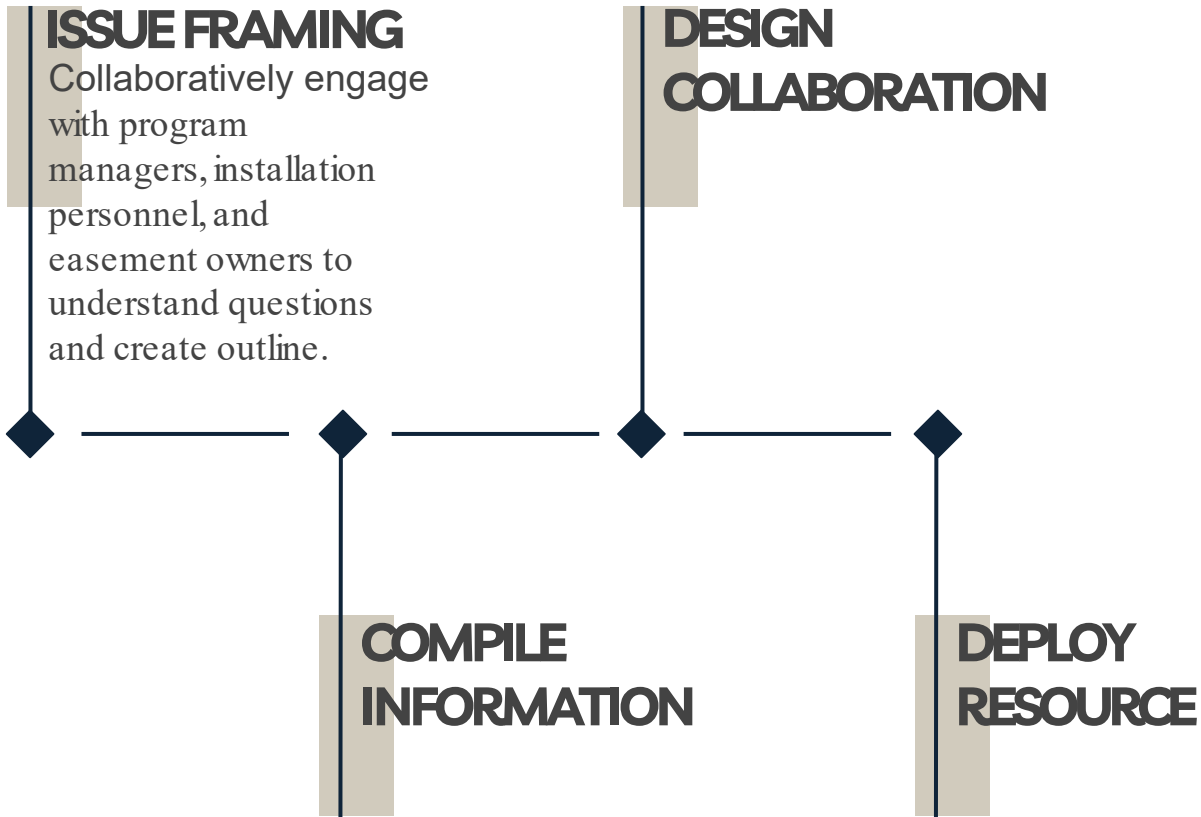
MANAGEMENT CHALLENGE

Current gap in information access after easement establishment burdens installation personnel.

MILITARY MISSION



PROJECT PLAN





PROGRAM MANAGERS

- Utah Grazing Improvement Program
- Utah Department of Agriculture and Food Agricultural Water Optimization Program
- LeRay McCallister Working Farm and Ranch Fund
- Utah Division of Wildlife Resources State Wildlife Management Program
- Division of Forestry, Fire and State Lands Wildland Urban Interface Prevention, Preparedness, and Mitigation Fund
- Utah Department of Agriculture and Food Invasive Species Mitigation Grants
- Utah Department of Agriculture and Food Agriculture Voluntary Incentives Program

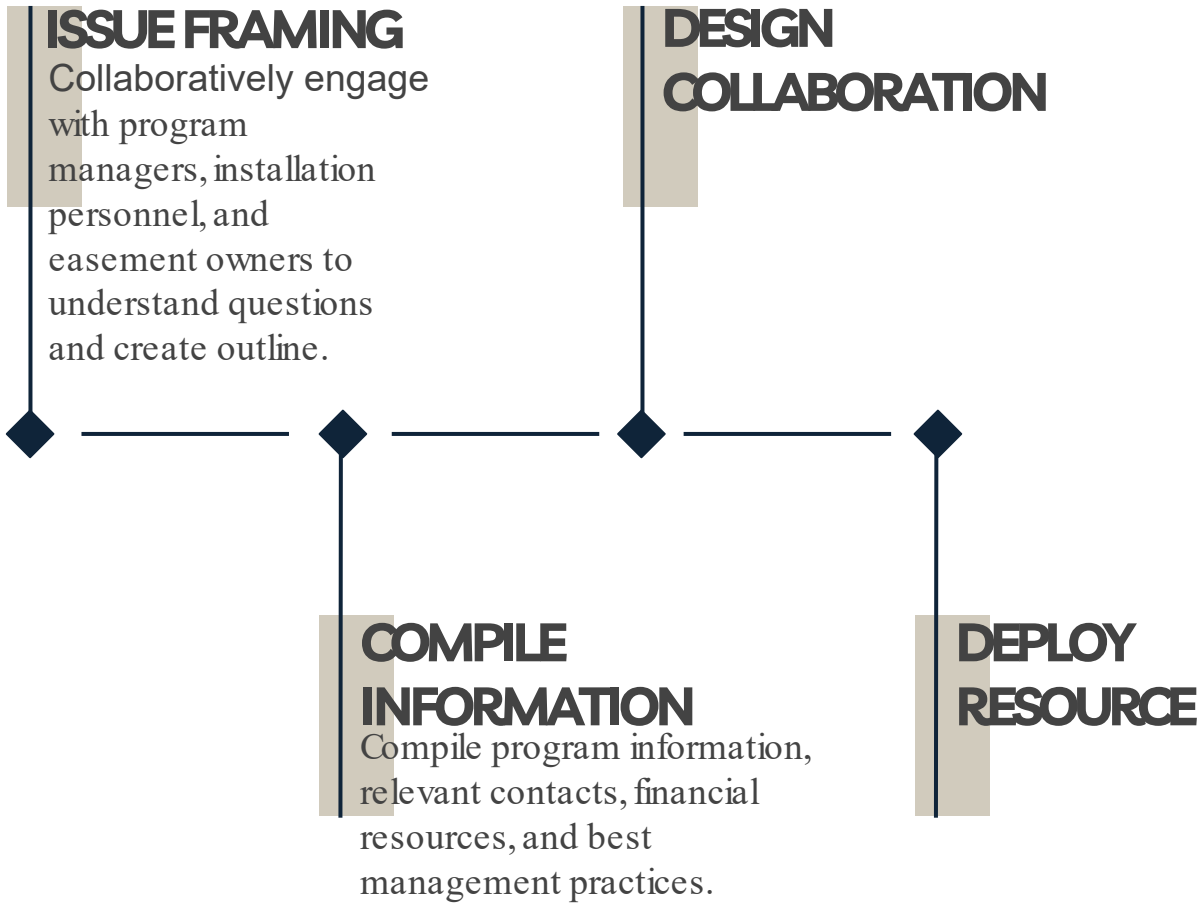
INSTALLATION PERSONNEL

- Camp Williams
- Hill Airforce Base
- Tooele Army Depot

PRIVATE LANDOWNERS

Approximately 25
Conservation Easement
landowners currently in
ACUB.

PROJECT PLAN



INDIVIDUAL ACTION

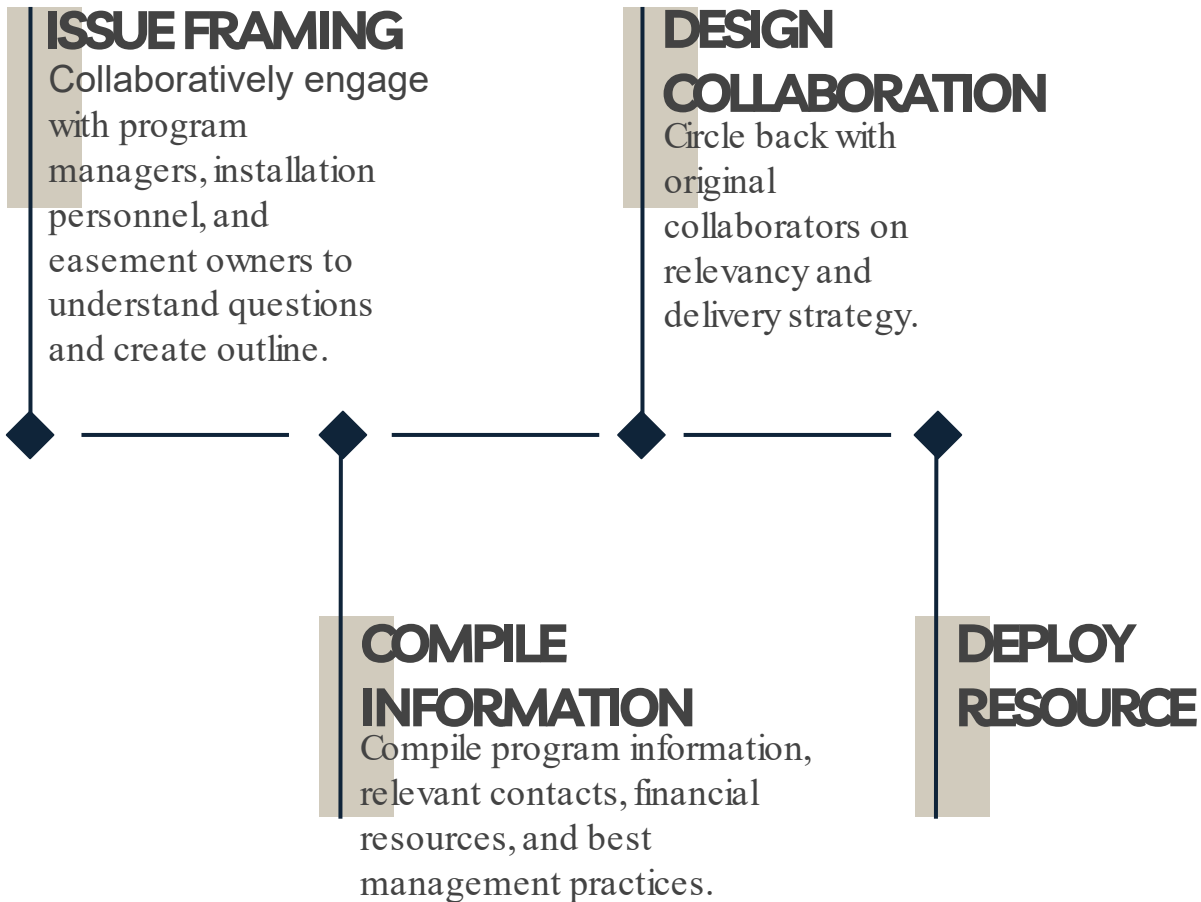
- Planting guides
- Best management practices
- Ownership changes

PROGRAM SUPPORT

- Opportunity details
- Relevant contacts
- Financial resources

COMPILE INFORMATION

PROJECT PLAN





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ISSUE FRAMING

Collaboratively engage with program managers, installation personnel, and easement owners to understand questions and create outline.

DESIGN COLLABORATION

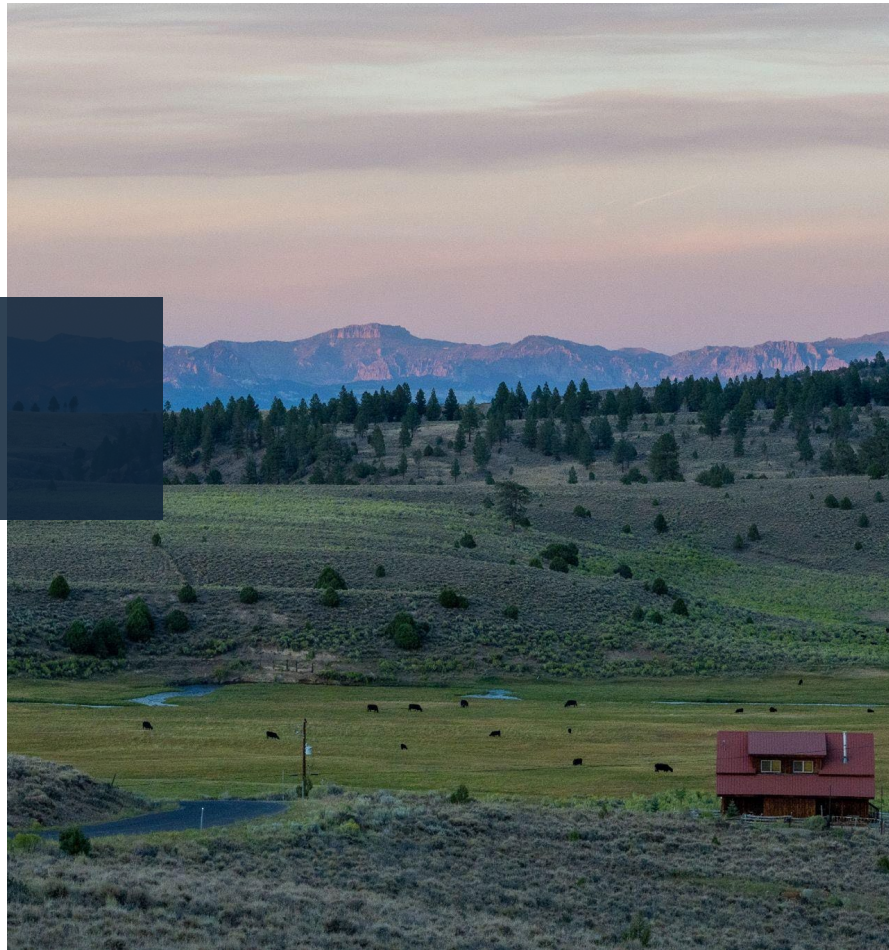
Circle back with original collaborators on relevancy and delivery strategy.

COMPILE INFORMATION

Compile program information, relevant contacts, financial resources, and best management practices.

DEPLOY RESOURCE

Create print materials for installation ease of distribution.
Host website on UACD website.



DEPLOY RESOURCE

Hosting this resource on the Utah
Association of Conservation Districts
(UACD) website makes it **easy to find**
by private landowners. UACD is a known
and **trusted source**..

OUTCOMES

By presenting a one stop shop on Conservation Easement management, we relieve installation pressures to support land owners, create a clear path for landowners interested in establishing easements, and ensure effective management for military mission of existing easements.



Soil Health in Utah

Utah one of the lowest adopters of soil health practices in the nation

- <15% of producers use conservation tillage
- UT ranks 42nd in acres of cover crops planted



Soil Health Practices

Utah Soil Health Partnership has promoted soil health practices

@ Although considerable interest, adoption has been low



Photo by Rhonda Miller

- Little data using Utah's farming systems
 - Cropping system (alfalfa, corn silage, wheat)
 - Dryland – wheat/fallow
- Water Availability
 - Quantity
 - Timing

CIG Soil Health Study

16 fields across the state

- Identify baseline soil health characteristics for 7 cropping systems
- Build support network
- Identify barriers to soil health practice adoption in Utah (surveys)
- Economics
- Environmental assessment – water quality



CIG Soil Health Study

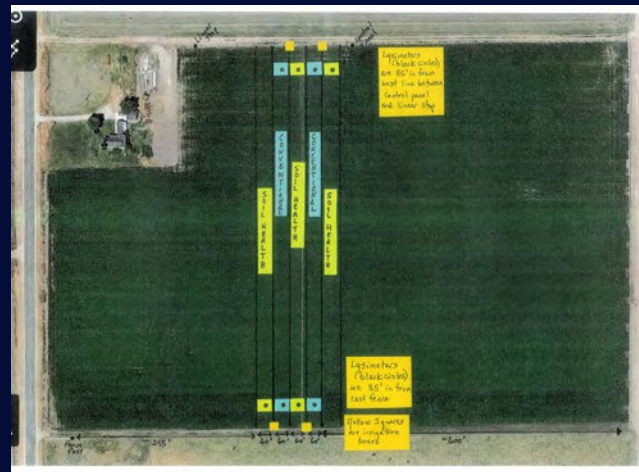


- Key soil health indicators including:
 - Soil Organic Carbon
 - Aggregate Stability
 - Bioavailable Nitrogen
 - Respiration
 - Active Carbon
 - Comprehensive chemical soil test
 - Bulk density
 - Infiltration
 - Water quality analysis for irrigated sites
 - Water holding capacity
 - Soil moisture via soil moisture sensors
 - Soil temperature at 4"
 - Soil biology (PLFA)

ClG Soil Health Study

@ Nutrient Leaching

- Two locations
 - Lewiston, UT
 - G.S.
 - J.C.
 - Lewiston and Kidman fine sandy loam soils
 - Both farms apply manure to soil
- 



Why Concerned?

Water Quality

@ ***Eutrophication*** –
algae growth, fish kills,
HABs



Photo by Rhonda Miller

Why Concerned?

Water Quality

- @ **Eutrophication** –
algae growth, fish kills,
HABs
- @ **Groundwater** –
blue baby syndrome,
spontaneous abortions in
livestock, childhood
cancers



Photo by Rhonda Miller

***Nutrients are the biggest
source of pollution from
agriculture***

Modified Zero-tension Lysimeters

- Access points in irrigation boxes



Cover Crop

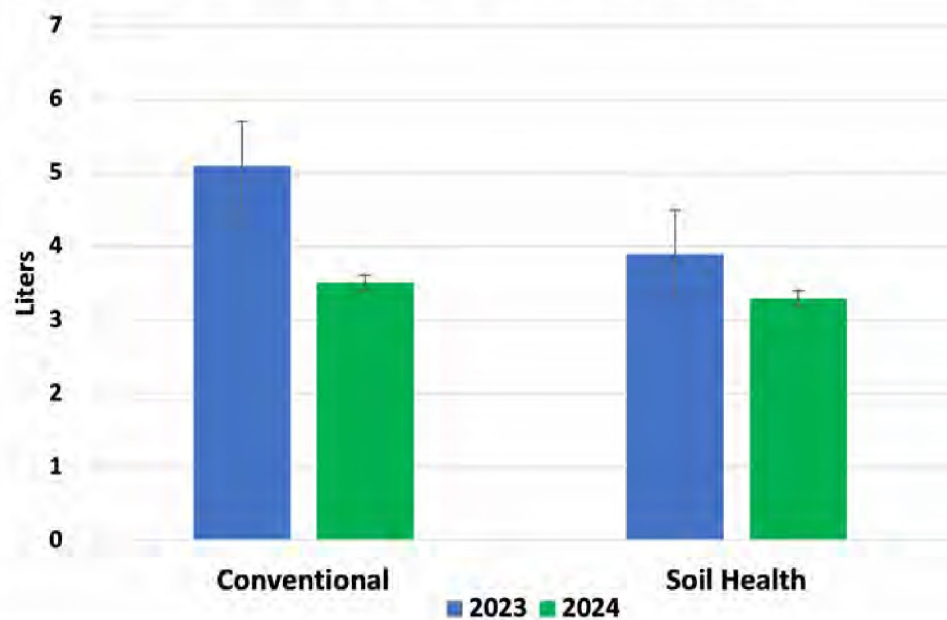
@ Grass (rye or oats),
clover and/or vetch,
brassica (radish)

@ Interseeded at ~V5
stage

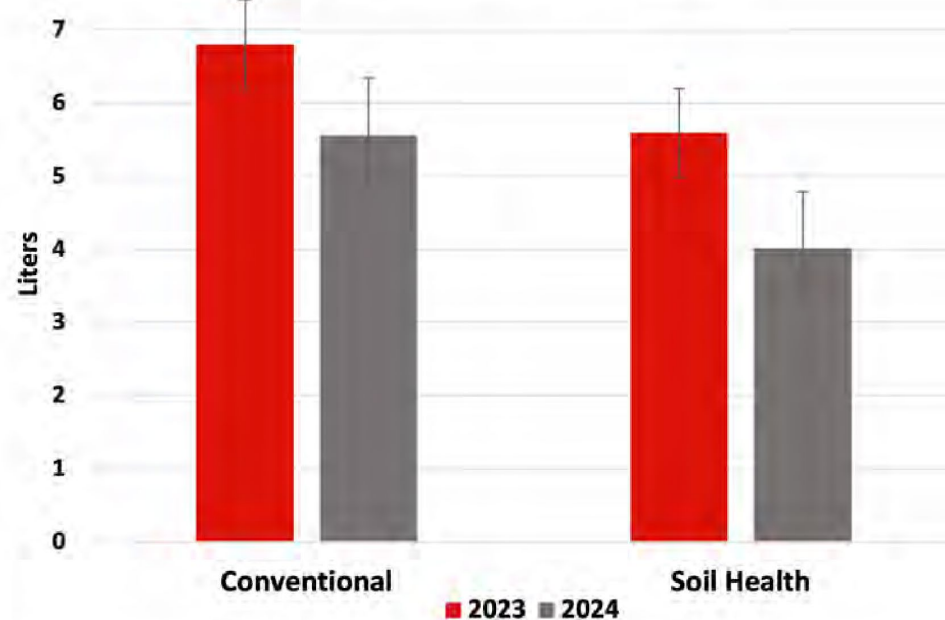


Preliminary Results – Leachate Volume

GS Average Leachate Volume per Lysimeter

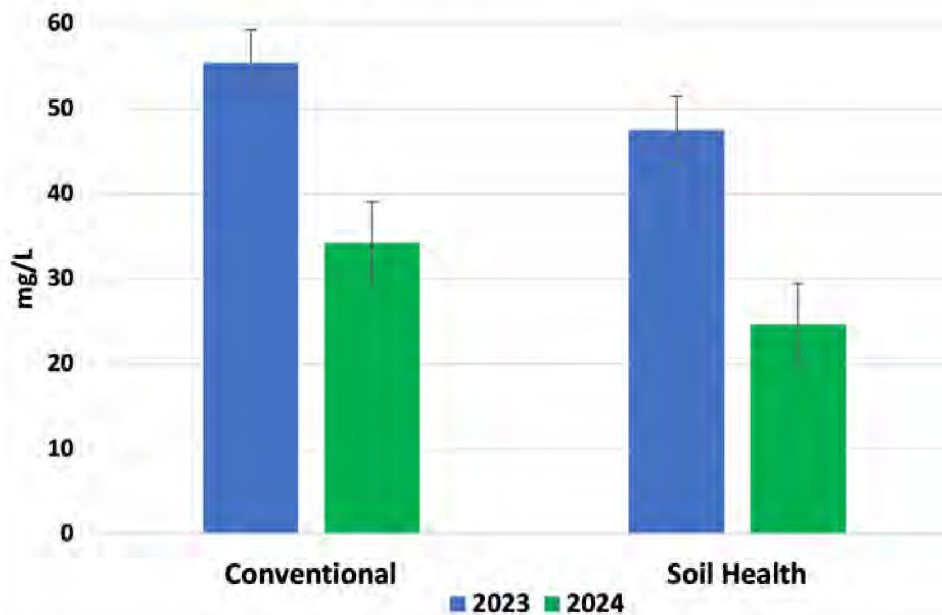


JC Average Volume per Lysimeter

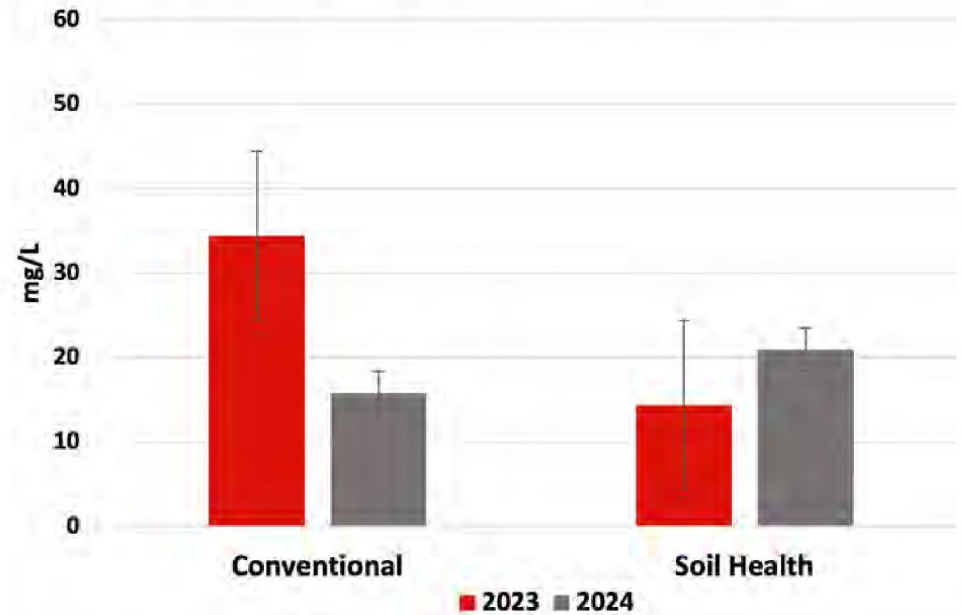


Preliminary Results – Nitrate Concentration

GS Average NO₃ Concentration per Lysimeter

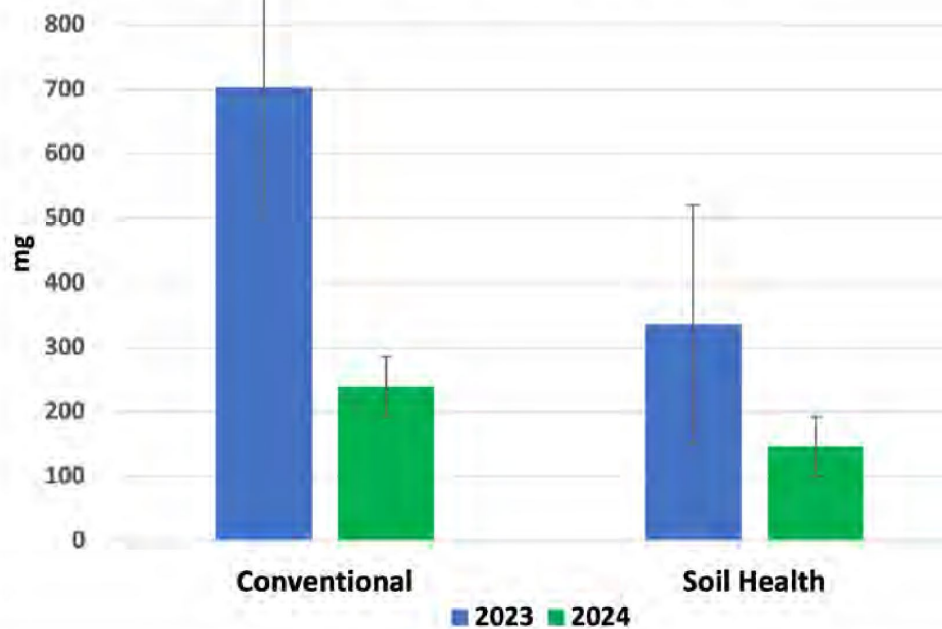


JC Average NO₃ Concentration per Lysimeter

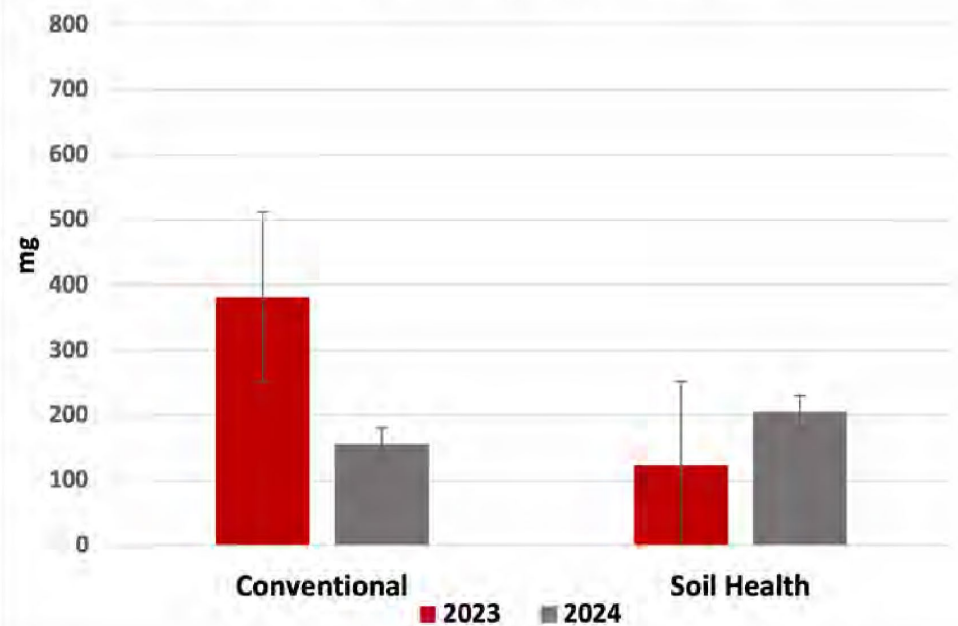


Preliminary Results – Total Nitrate

GS Average Total Nitrate per Lysimeter

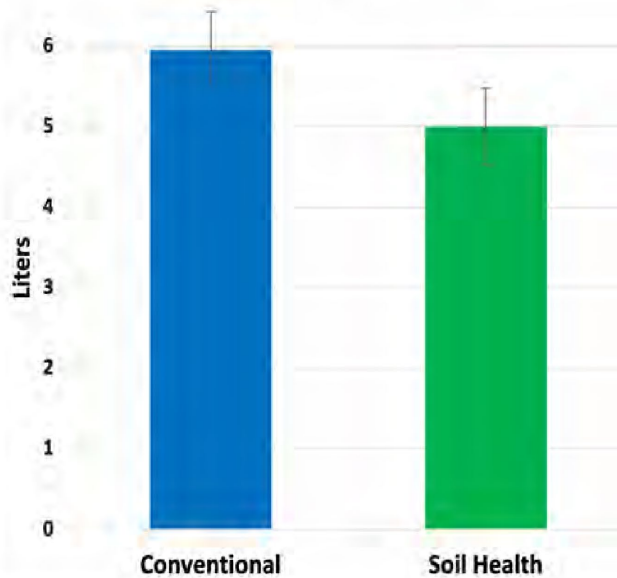


JC Average Total Nitrate per Lysimeter

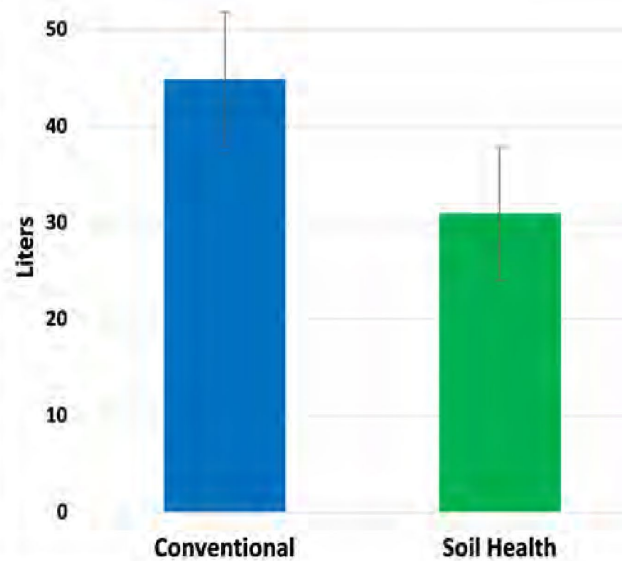


Preliminary Results – 2023

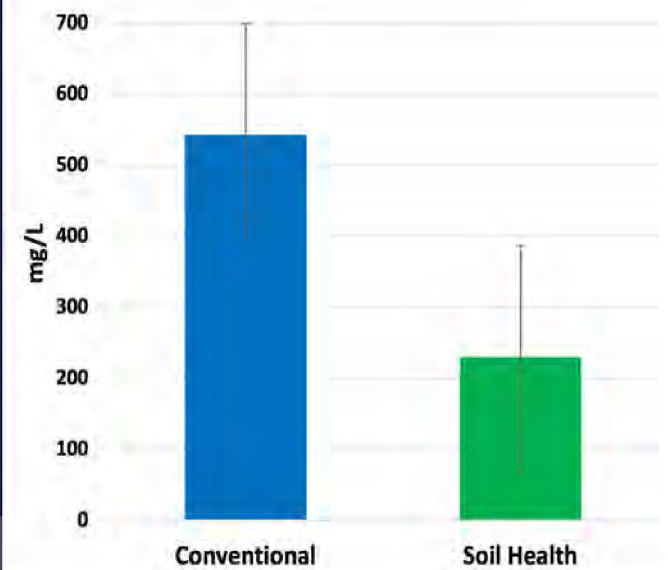
Volume/Lysimeter



NO₃ Concentration/Lysimeter



Total NO₃/Lysimeter



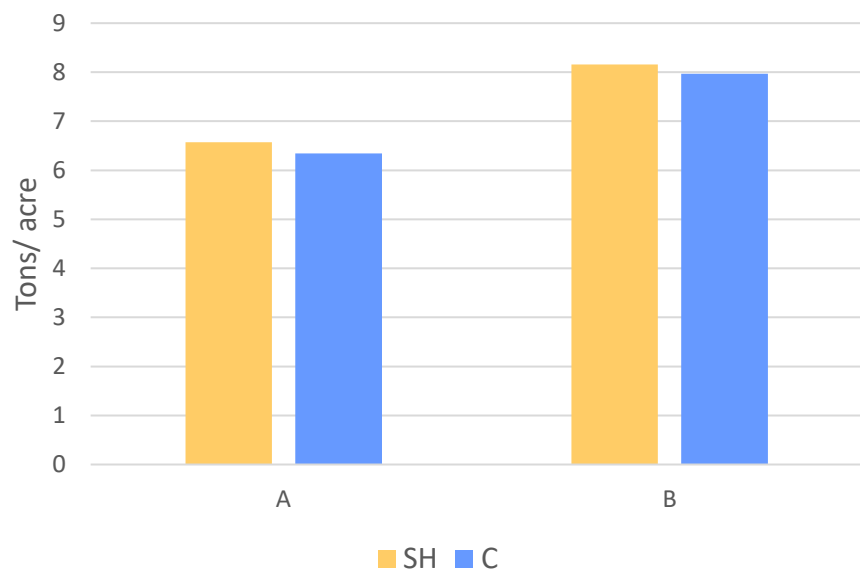
Conclusions

- @ Interseeding early in season helps counter short growing season
- @ Narrow window for cover crop establishment
- @ Even with short growing season, cover crops reduce nitrogen leaching

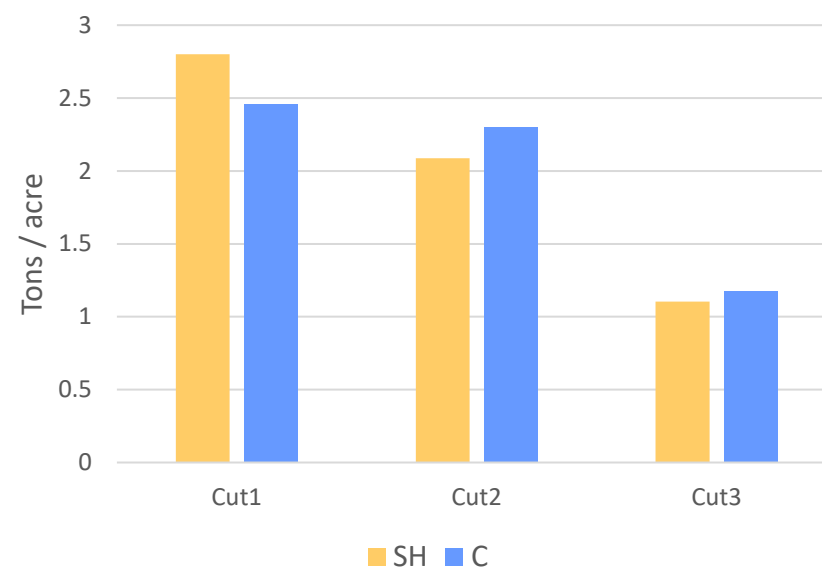


Row Labels	Type	Organic									Available							
		1:1 Soil pH	Matter LOI %	Olsen P ppm P	Potassium ppm K	Sulfate-S ppm S	Zinc ppm Zn	% Sand	% Silt	% Clay	Water inch H2O inch-1 of soil	Field Capacity % (wt.)	Ace Protein g/Kg	Water Stable s (Mod)	Soil Health Score	Microbially Active Carbon (%MA)	POX-C ppm C	CO2 Soil Respiration
	Crop	8.7	3.5	38.9	440.3	40.3	1.0	26.9	30.1	43.0	0.2	33.8	2.1	64.6	9.5	31.4	589.4	44.8
	Crop	7.8	2.7	59.7	798.3	19.2	3.7	80.5	10.0	9.5	0.2	20.1	5.0	74.1	16.3	26.7	595.8	67.9
	Crop	7.7	3.4	13.6	305.4	7.3	1.0	41.7	31.4	26.9	0.2	30.8	2.3	78.1	13.2	41.7	507.6	75.8
	Crop	9.2	1.9	18.3	893.2	21.9	0.9	38.8	37.7	23.6	0.2	28.1	2.1	39.3	7.3	10.4	357.5	17.1
	Crop	8.1	5.1	55.8	1700.5	16.2	2.4	34.0	25.3	40.8	0.2	33.3	4.5	85.5	26.0	41.7	800.3	159.7
	Crop	8.0	1.6	14.9	90.9	8.3	2.2	77.0	13.5	9.5	0.1	15.0	2.2	39.3	7.9	29.1	451.6	75.8
	Crop	8.1	1.4	51.5	504.1	19.3	7.7	69.3	17.0	13.8	0.1	16.7	2.9	56.0	7.6	19.3	519.3	27.3
	Dryland Crop	8.2	2.3	9.2	1048.2	7.1	0.4	36.6	36.8	26.6	0.2	29.8	1.6	31.0	4.5	24.6	440.2	18.8
	Garden	7.8	4.1	41.1	766.5	14.2	7.2	59.0	23.0	18.0	0.2	29.2	4.4	73.0	15.1	15.2	604.5	50.2
	Garden	8.1	4.9	180.0	460.5	89.7	3.7	55.0	22.0	23.0	0.2	31.2	8.9	44.5	15.0	36.4	1160.0	82.3
	Pasture	8.0	3.2	7.1	149.2	16.1	1.1	55.7	20.9	23.4	0.2	27.1	3.5	83.4	12.1	38.7	566.6	64.5
	pasture	8.3	3.4	12.1	502.4	25.5	1.1	33.4	32.6	34.0	0.2	32.4	3.6	76.9	14.0	36.7	674.4	74.0
	Pasture	7.8	1.4	13.1	299.4	5.3	0.3	49.8	29.3	21.0	0.2	24.4	1.2	19.6	7.5	32.9	217.8	36.3
	Pasture	7.6	1.2	5.8	98.6	6.2	1.5	84.2	7.6	8.2	0.1	13.6	2.0	76.4	5.9	22.8	362.0	23.2
	Pasture	7.3	3.2	6.3	194.9	9.6	0.8	47.1	24.8	28.1	0.2	30.0	5.9	94.2	20.9	67.8	850.4	169.8
	Pasture	8.3	11.8	7.3	219.3	381.3	1.4	26.1	18.4	55.5	0.1	28.7	11.4	79.9	36.4	103.7	2028.3	425.8

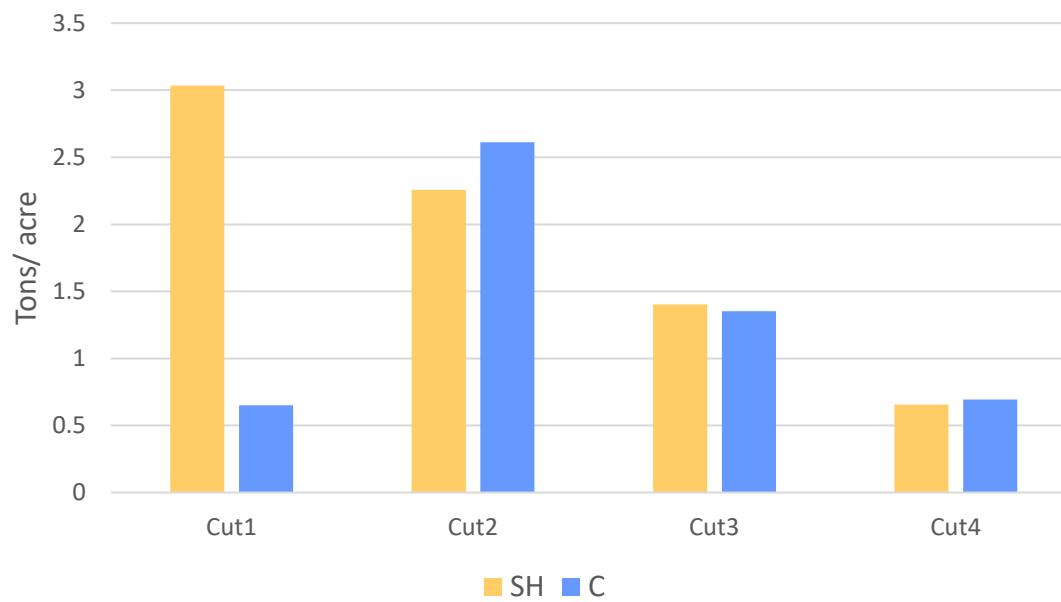
Corn Yield- Lewiston



Alfalfa Yield - Delta



Alfalfa Yield- Circleville



Acknowledgements:

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“Utah Soil Health Partnership On-Farm Trials”