



**WYOMING
COLLABORATIVE
FOR HEALTHY SOILS**

Wyoming Roadmap for Healthy Soils

2023

Full report and appendices are available at
www.groundupconsulting.us/wchs

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Healthy soils are the foundation of robust and resilient agricultural systems and economies. Based on extensive stakeholder engagement, this roadmap contains the findings and recommendations of the Wyoming Collaborative for Healthy Soils (WCHS) to support the voluntary adoption of soil health practices by Wyoming farmers and ranchers.

There is substantial interest in soil health among Wyoming producers and agricultural professionals. Despite this interest, many barriers prevent Wyoming producers from adopting soil health practices. At the same time, there are numerous opportunities to expand soil health activities in the state. This Roadmap identifies **nine overarching barriers and opportunities** facing Wyoming producers and ag professionals. Among the most significant are: 1) the perceived costs of soil health practices, 2) the need for financial and technical assistance; 3) a desire for educational resources; and 4) a lack of demonstration projects and Wyoming-specific research on the impacts of soil health practices.

This Roadmap first summarizes the results of surveys, listening sessions, and interviews that engaged with over 230 producers and ag professionals from across the state. It then highlights the recommendations of two working groups dedicated to understanding and advancing solutions with respect to soil health science and education. Next, cross-cutting recommendations that arose out of consideration of the totality of input from the stakeholder engagement process are included. In total, this Roadmap contains **30 recommendations** to encourage the voluntary adoption of soil health practices. Finally, **four key steps to implementation** are identified to ensure these recommendations do not stay on the page.

Not all of the work taken on by the Collaborative could be contained within these pages: **four appendices** linked on p. 13 elaborate on the details of these recommendations.

The goal of WCHS is to support the widespread adoption of soil health practices through a stakeholder-driven process.

BACKGROUND

The Wyoming Collaborative for Healthy Soils (WCHS) is a multi-stakeholder effort aimed at engaging the broad agricultural community to identify ways to support producers in the voluntary adoption of soil health practices on croplands and grazing lands. It is currently funded by the University of Wyoming.

Started by Dr. Jay Norton in Winter 2022, WCHS is now led by Dr. Liana Boggs Lynch at the University of Wyoming with the support of Ground Up Consulting. This Roadmap is the culmination of the work accomplished over the past year (2022 - 2023) and is intended to advance and incentivize the adoption of voluntary soil health practices in Wyoming.

WCHS's core principles include being producer-centered; science and evidence-based; participatory, collaborative and transparent; and action-oriented. The group is committed to only pursue solutions that are voluntary and incentive-based and will not consider any new mandates.

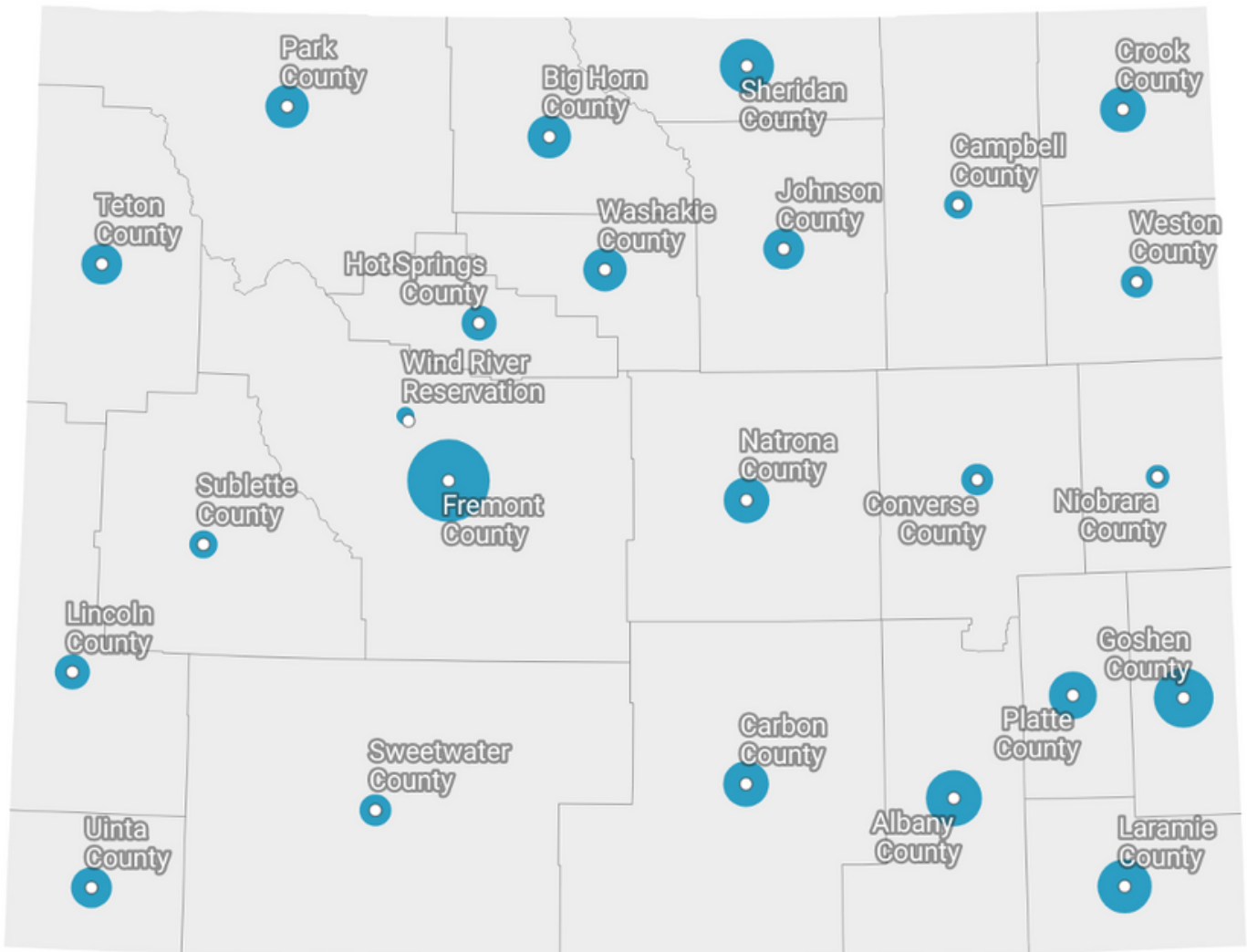
Guided by a diverse Coordination Team, WCHS gained input from the agricultural community in various ways to develop the roadmap, including, 1) listening sessions, 2) producer and agricultural professional surveys; and 3) working groups. Working groups included: 1) Stakeholder Engagement; 2) Science and Practice; and 3) Education.

Meetings of the full Collaborative were held regularly to engage and solicit feedback from those unable to otherwise participate.

STAKEHOLDER ENGAGEMENT GROUP

Purpose: To design a process to engage Wyoming producers and agricultural professionals in identifying the barriers and opportunities regarding soil health

The Stakeholder Engagement Group heard from 234 people across every county in the state. 157 people took part in eight listening sessions; 57 producers and 20 Ag professionals shared their perspectives through a survey; and 4 producers took part in in-depth interviews.

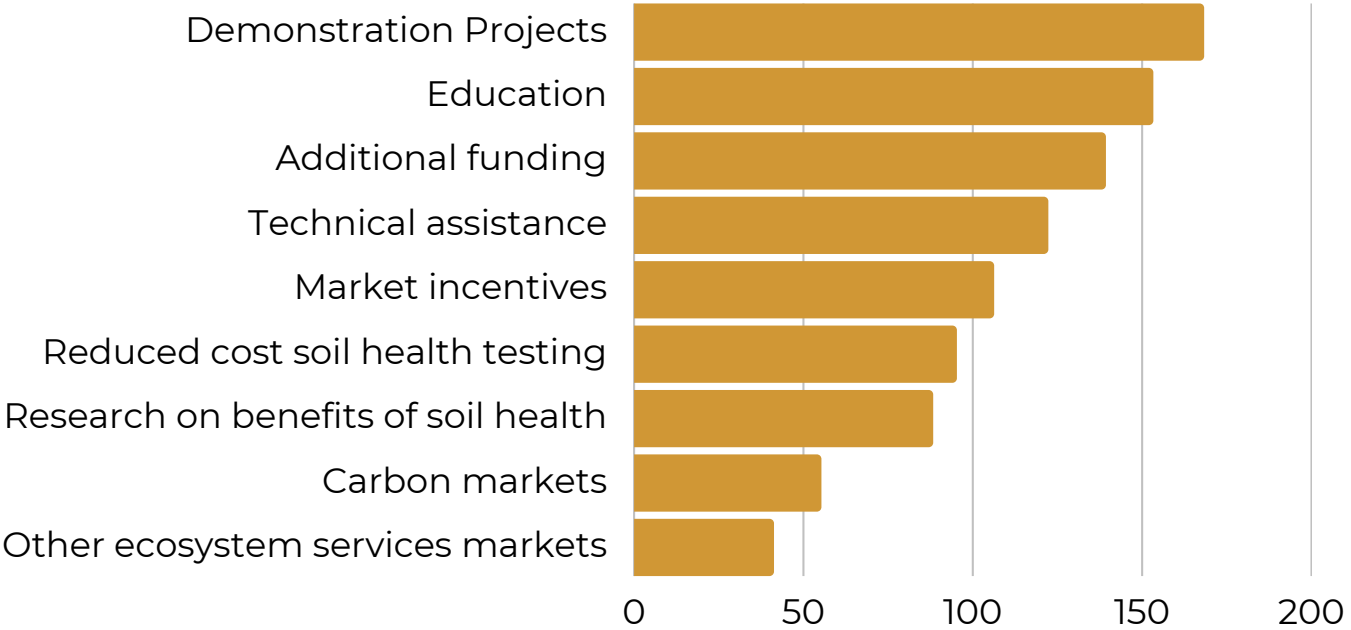


See [Appendix 1](#) for the full Stakeholder Engagement report.

What are the most significant barriers that you or producers in your area in improving soil health?

Barrier (n=57)	Low	Moderate	High
Cost of soil improving practices	3.39%	32.20%	64.41%
Lack of information	14.81%	42.59%	42.59%
Lack of technical assistance	8.62%	48.28%	43.10%
Low residue crops	8.33%	50.00%	41.67%
Managing high levels of crop residue	33.33%	35.56%	31.11%
Sandy Soils	32.00%	34.00%	34.00%
Required tillage	28.85%	44.23%	26.92%
Livestock rotational restrictions	37.78%	28.89%	33.33%
Lack of markets	40.00%	30.00%	30.00%
Crop insurance restrictions	38.78%	26.53%	34.69%
Access to land	36.17%	36.17%	27.66%
Access to specialized equipment	25.64%	38.46%	35.90%

What mechanisms would support producers in your area in achieving their soil health goals?



SCIENCE AND PRACTICE GROUP

Purpose: To provide recommendations on soil health science that are needed to support producers in the voluntary adoption of soil health practices.

Overarching Barriers and Opportunities

Wyoming-specific research

There is a lack of Wyoming-specific research on the impacts of soil health practices on critical factors, including impacts on yield, drought resilience, and economics. As a result, producers need more Wyoming-specific information on successful strategies for achieving soil health in a sustainable manner.

Related recommendations: SP1, SP9, SP4, SP10

Consistent approach to defining and measuring soil health

Related to the scarcity of Wyoming specific research, Wyoming needs a consistent approach to defining and measuring soil health, which can serve as the basis for providing meaningful quantitative and qualitative benchmarks for producers.

Related recommendations: SP2, SP3, SP4, SP6, SP7, SP8, SP9

[See Appendix 2 for the full Science and Practice Group report.](#)

RECOMMENDATIONS

Science and Practice Group Recommendations

General Recommendations

SP1: Utilize the NRCS definition of soil health

Recommendations for Croplands

SP2: Encourage the widespread use of in-field soil health assessments pursuant to NRCS 2021 guidance to develop quantitative, region specific benchmarks for soil health

SP3: Recommended Lab Analyses

SP4: Integrate the “Soil Health Gap Concept” into producer programs and research to establish region-specific, quantitative benchmarks

Recommendations for Grazing Lands

SP5: Emphasize the soil health principles, monitoring, and the decision-making process rather than practices in producer education

SP6: Encourage producers to use the USDA NRCS Pasture Condition Score Index for assessing managed pastures

SP7: Develop an easy to use assessment form like the Pasture Condition Score Index for assessing rangelands

SP8: Develop an easy to use web-based tool for monitoring grazing lands

Recommended Research Areas and Methodology

SP9: Create a network of on-farm/on-ranch demonstration and research sites

SP10: Include robust financial analyses in scientific research and government programs

SP11: Conduct additional research on carbon markets

EDUCATION GROUP

Purpose: To identify the most important information gaps for producers and agricultural professionals, why those gaps exist, and ways to overcome them

Overarching Barriers and Opportunities

Resources and assistance for interpreting soil health test results

As identified by the Science and Practice group, farmers and ranchers need a baseline and parameters that define soil health specifically for Wyoming. In addition to this, they also need resources and assistance for *interpreting and applying* soil health test results.

Related recommendations: SP1, E1, E2

Access to and connection with soil health information and resources

Producers and agricultural professionals have trouble accessing information and resources on soil health *even though many resources exist*.

Related recommendations: E3, E4, E5, E6

Regionally and locally specific support

Producers and agricultural professionals require information, technical assistance, and resources that are *regionally and locally specific*.

Related recommendations: E7, E8

Understanding the economic impacts of soil health

Producers need more evidence and proof that soil health practices provide economic benefits in Wyoming.

Related recommendations: SP9, E9, E10

Mitigating the risk of trying new practices

Producers need financial support, technical assistance, and social support to mitigate the risk of trying out new soil health practices.

Related recommendations: E11, E12, E13, E14, E15

See Appendix 3 for the full Education Group report.

RECOMMENDATIONS (CONT.)

Education Group Recommendations

E1: Promote printed and digital resources for interpreting soil health test results

E2: Provide technical assistance to interpret assessment results and suggest new practices

E3: Establish an online soil health hub

E4: Plan and host an annual Wyoming soil health symposium

E5: Start (and maintain) a listserv to promote events, educational opportunities

E6: Distribute a monthly or quarterly newsletter

E7: Develop local/regional educational conservation resource guides

E8: Increase and enhance field days

E9: Design decision support tools

E10: Expand economic case studies

E11: Utilize Technology to Enhance Peer to Peer/Mentor Connection

E12 Provide financial assistance to incentivize experimentation

E13: Build pathways that connect producers with a network of technical assistance providers

E14: Organize peer-to-peer learning

E15: Provide scholarships to attend soil health events and conferences

CROSS-CUTTING BARRIERS AND OPPORTUNITIES

The following barriers, opportunities and recommendations result from the totality of stakeholder input and input from the Coordination Team.

Overarching Barriers and Opportunities

Inadequate funding for conservation districts and producers

Conservation districts have long been at the forefront of assisting producers in improving their soil health. Across the state, however, conservation districts suffer from inadequate resources to meet producer needs, including providing educational resources and technical assistance, as well as hosting field days and establishing demonstration projects. Applying for grants is also resource intensive, and conservation districts and producers would benefit greatly from assistance.

Related recommendations: CC1, CC2

Engagement with regional soil health efforts

Opportunities exist for Wyoming to learn from and engage with ongoing soil health efforts in the Rocky Mountain West related to policy, science, and markets. These include the STAR program (see Appendix 2 in Education Report), regional interdisciplinary research, and the development of new market signals.

Related recommendations: CC3, CC4

RECOMMENDATIONS (CONT.)

Cross-cutting Recommendations

CC1: Seek additional funding from philanthropy, grants, or the state for conservation districts and producers

CC2: Provide assistance for conservation districts and producers to apply for grants

CC3: Engage with supply chain partners

CC4: Make the STAR Rating System available for Wyoming producers

IMPLEMENTATION

The following four key steps are included to energize this dialogue into strategic action. These key steps will help to ensure that this Roadmap is implemented with urgency and efficiency.

1

Identify Wyoming partner(s) to lead the next phase of this effort

A Wyoming-based organization will be needed to hire a coordinator and to serve as the lead entity for any future grant or philanthropic funding.

2

Hire a coordinator to implement this effort

A part-time or full-time position is needed to implement this roadmap and coordinate future soil health programming and pursue new opportunities.

3

Seek funding for key activities in this roadmap

Additional funding will be required to support and facilitate the implementation of these recommendations.

4

Continue the Wyoming Collaborative for Healthy Soils

There is strong interest in continuing WCHS as a way to ensure that this Roadmap is implemented with ongoing input from the community.

APPENDICES

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STAKEHOLDER ENGAGEMENT RESULTS

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RECOMMENDATIONS OF THE WCHS SCIENCE AND PRACTICE GROUP

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RECOMMENDATIONS OF THE WCHS EDUCATION GROUP

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LIST OF PARTICIPANTS

This work was supported through a generous grant from the University of Wyoming School of Energy Resources. The effort of many people made this work possible. Please see Appendix 4 for a list of participants in this Collaborative process.

This Roadmap is dedicated to the memory of Dr. Jay Norton.

You will always inspire us.

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