



**WYOMING
COLLABORATIVE
FOR HEALTHY SOILS**

RECOMMENDATIONS OF THE WCHS
EDUCATION GROUP

June 30, 2023

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Executive Summary

The broad purpose of the WCHS Education working group was to identify the most important information gaps for producers and agricultural professionals, why those gaps exist, and ways to overcome them. The group took into consideration the importance of collaborative learning, promoting alternatives, and diversity of thought and experience in exploring barriers, and placed a high level of importance on making recommendations that are relevant, current and useful at the moment.

The WCHS Education Working Group was initiated in September 2022 and includes representatives from Central Wyoming College, Natural Resource Conservation Service (NRCS), Conservation Districts, University of Wyoming - Extension, Wyoming Food Coalition, Arapahoe Ranch, and Wyoming Wheat Growers Association. This group identified five major information gaps, barriers, and opportunities facing Wyoming producers and agricultural professionals. These are:

1. Resources and assistance for interpreting soil health test results
2. Access to and connection with soil health information and resources
3. Regionally and locally specific support
4. Understanding the economic impacts of soil health
5. Mitigating the risk of trying new practices

Over the course of eight meetings, the Education Working Group reviewed results from stakeholder engagement listening sessions and surveys to assess educational needs to support the voluntary adoption of soil health practices in Wyoming. The fifteen recommendations listed below are the outcomes of these meetings.

Recommendations of the WCHS Education Group

Overarching Barriers and Opportunities	Needs identified through Stakeholder Engagement	Recommendations
1) Resources and assistance for interpreting soil health test results	“Farmers and ranchers need a baseline and parameters that define soil health in WY, and how to interpret and apply soil health test results”	<ol style="list-style-type: none"> 1. Promote printed and digital tools to interpret assessment results 2. Provide technical assistance to interpret assessment results
2) Access to and connection with soil health information and resources	“Producers and ag professionals have trouble accessing information and resources on soil health (even though many resources exist).”	<ol style="list-style-type: none"> 3. Establish an online soil health hub (website) 4. Plan and host an annual Wyoming soil health symposium 5. Start (and maintain) a listserv 6. Distribute a monthly or quarterly newsletter
3) Regionally and locally specific support	“Producers and ag professionals require information, technical assistance, and resources that are <i>regionally and locally specific</i> .”	<ol style="list-style-type: none"> 7. Develop local/regional educational conservation resource guides (playbook/toolkit). 8. Increase and enhance field days
4) Understanding the economic impacts of soil health	“Producers need more evidence and proof that soil health practices provide economic benefit in Wyoming.”	<ol style="list-style-type: none"> 9. Design decision support tools (e.g. partial budget analysis) 10. Expand economic case studies 11. Utilize Technology to Enhance Peer to Peer/Mentor Connection
5) 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”	<ol style="list-style-type: none"> 12. Provide financial assistance to incentivize experimentation. 13. Build pathways that connect producers with a network of technical assistance providers. 14. Organize peer-to-peer learning. 15. Provide scholarships to attend soil health events and conferences.

Barrier 1: Resources and assistance for interpreting soil health test results

“Farmers and ranchers need a baseline and parameters that define soil health in WY and how to interpret and apply soil health test results.”

The Wyoming farming and ranching community emphasized the need to define soil health specific to Wyoming. It is important to understand soil health in the context of the land you are working with. The climate, ecology and type of farming or ranching operation make each soil health journey unique. Although the soil health principles are universal, how they are implemented on each operation is dependent on the context of the operation and should reflect the goals and style of the individual land manager or producer.

Recommendations for Barrier #1:

- **Promote printed and digital resources for interpreting soil health test results.** Printed or digital resources for interpreting soil health test results exist however, they can be difficult to use without guidance from a professional or someone who has experience in their use and application. The NRCS has both an [in-field assessment tool](#) and a train-the-trainer program that can serve as useful tools for soil assessment and connecting producers with professionals and peers for the purpose of assessing soil health on individual operations, shared learning, and implementation of practical, relevant soil health practices.
- **Provide technical assistance to interpret assessment results and suggest new practices.** It is important to work with an agricultural professional to understand soil health test results and implement appropriate practices on individual operations. Therefore, in addition to tools to assess soil health; producers need access to professionals who can provide technical assistance.

Barrier 2: Access to and Connection with Soil Health Information and Resources

“Producers and ag professionals have trouble accessing information and resources on soil health (even though many resources exist)”

There are a lot of resources and good information available. However, it can be difficult to connect with these resources. Information and resources must be trustworthy and must be able to be interpreted and implemented by the producers themselves.

Recommendations for Barrier #2:

- **Establish an online soil health hub that includes links to partner information and resources in Wyoming.** This online resource could serve as a “one-stop shop” for educational resources and opportunities, technical assistance, and access to specialized equipment.

An online soil health hub could connect producers with equipment and other resources available through their local Conservation District as well as link to the Wyoming Natural Resource Conservation Service Soil Health webpage. Access to these documented best practices could be made available through this online soil health hub. Additional recommendations for this resource include a searchable table of valuable books, podcasts, fact sheets, videos and webinars, events, educational degrees, programs, workshops, and field days, and a list of potential funding resources.

- **Plan and host an annual Wyoming soil health symposium** that brings together producers, academics and policy makers to share knowledge and ideas about soil health and promotes networking and connectivity among land managers.

Quality over quantity is an important consideration, especially at the beginning. It can be difficult to gain vendors’ commitment when an annual event is first launched. Consider collaborating with multiple partners or coordinating with an existing event such as an annual meeting of a related organization. Planning a virtual event can be a good option to start with as numbers will likely be small; transition to an in-person conference over time. Finally, organizers should reach out to those who have hosted similar events (eg, the Montana Soil Health Symposium) to learn from their success, particularly around topics, speakers, timing and place.

- **Start (and maintain) a listserv to promote events and educational opportunities.** This is a good place to start in terms of high impact with minimal cost and effort. This project would require the commitment of a partner organization willing to host and maintain the listserv.

Over the longer term the listserv could be grown into a network that producers and land managers can join that connects participants with mentors, industry leaders and experienced peer producers who can share experiences and provide information about practices that improve soil health. A partnership effort of multiple entities to create a network that would connect the agricultural community through shared experiences and learning could help producers save time and money and would be of great value in Wyoming.

- **Distribute a monthly or quarterly newsletter** to strengthen community and build connections around soil health.

A newsletter could share science, success stories, best practices, and learnings across Wyoming. It could also provide practical education and support to producers through short articles written by experienced producers and agricultural professionals to increase the level of understanding and problem-solving skills for implementation of practices that improve soil health. It could solicit ideas, inform the community of upcoming events, and share information on learning opportunities across the state. Finally, a newsletter is a great way to encourage connection, discussion and participation in soil health efforts.

Barrier 3: Regionally and locally specific support

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

Producers are often very knowledgeable about what works and does not work on their land having learned through trial and error. Many have worked together with other producers and ag professionals to document best practices in their region. There is a significant opportunity for other farmers and ranchers to learn from this progress.

Recommendations Barrier #3:

- **Develop local/regional educational conservation resource guides (toolkits/playbooks)** for farmers, ranchers and agricultural professionals that recommend and describe multiple effective, practical and affordable conservation practices with the goal of improving soil health. These toolkits or playbooks could document what practices have been tried and the level of success associated with the application of each practice. This resource could also serve as a curriculum for field days and be used as a resource to get land management agencies and ag support professionals (BLM, Forest Service, Extension, NRCS) all on the same page relative to soil health and monitoring.

It is important that resources that have been developed do not sit on a shelf, rather are shared widely with producers. Existing information could be housed in a central location (see previously recommended online soil health hub) to ensure producers have access to this information.

Similar projects have been completed for wheat growers in [Platte County](#) in partnership with NRCS. Going forward, there is potential for this to be a project that is undertaken by interested Conservation Districts with support from WACD and NRCS.

- **Increase and enhance field days.** Increase the number of field days, better promote them, and enhance field day programming by providing ready-to-go curriculum.

Organizers can also build off and learn from existing field day programs. For example, at University research stations wheat producers are doing variety trials—there could be an opportunity to incorporate an educational component into these trials. Similarly, Central Wyoming College has an Education Farm in Lander. This

could serve as a good educational opportunity for specialty growers and producers interested in high-altitude, semi-arid fruit, and vegetable crop production.

Field days are also needed for rangeland as well as cropland. The Wyoming Department of Agriculture has a rangeland health assessment program that is legislatively funded. This program helps with range monitoring and there could be an opportunity to incorporate education into this program. The NRCS also has resources specifically for rangeland health, including monitoring and could serve as a good partner for educational field days. The BLM is another potential partner for rangeland education (field days).

Barrier 4: Understanding The Economic Impacts of Soil Health:

“Producers need more evidence and proof that soil health practices provide economic benefit in Wyoming”

Economics, strategies and the benefits of improving soil health go hand-in-hand. Economic costs are important drivers as well as barriers for farmers and ranchers in the adoption or expansion of soil health improving practices. However, while improving soil health may result in economic benefit, there is also an economic risk in trying new soil health practices.

Recommendations for overcoming the economic barriers to implementing practices for improving soil health fall into two categories: 1) Supporting farmers and ranchers in understanding the economic impact of soil health on their operations; and 2) Mitigating the economic risk of trying or expanding soil health practices to producers. The recommendations included in this section address the first category; the second category is captured in barrier 5.

Recommendations Barrier #4:

- **Design decision support tools** to help Wyoming producers incorporate soil health into their decision making.

Management of a farm or ranch operation requires daily decision-making to determine which alternative will allow the agricultural producer to achieve their goals and be as profitable as possible. Development of decision making tools like Partial Budget Analysis and Enterprise Budgets make the decision making process easier. CSU’s Agricultural Business Management Team’s [website](#) contains one example of decision support tools focused on soil health.

- **Expand economic case studies** to provide proof points for soil health practices.

Currently, there is limited economic data available relative to the implementation of soil health practices in Wyoming. Additional economic case studies, including a diversity of production types, would be helpful in decision making relative to implementing practices to improve soil health in other parts of the state.

This recommendation also includes sharing existing economic case studies where they exist. A significant amount of economic data has been collected on wheat

production in southeast Wyoming. Additionally, economic data may also exist from private consultants and organizations that provide consulting services such as Ranching for Profit, Understanding Ag and others. These organizations or professionals may be willing to share information and data.

- **Utilize Technology to Enhance Peer to Peer/Mentor Connection.** Technology could be used to enhance network interactions by the development or integration of an app that allows producers to form localized connections and view the strategies of other producers in their area. The app could be used to introduce new ideas and encourage producers to brainstorm together.

Similar apps have been developed that allow producers to engage with other producers and mentors about their interests and goals, search for mentors by location or topic, create posts and share ideas, connect with other users who have used government programs and can offer advice, and view articles, resources, relevant news and industry updates as well as stay informed about local events and resources. For example, Ag-chat is used effectively in this way by younger producers.

Barrier 5: Mitigating 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”

Lowering the economic risk through financial support, technical assistance, and social support can assist farmers and ranchers in trying new practices while they develop and increase their understanding of the economic benefit of improved soil health on their operations. Experience is often the best teacher, with the appropriate support, farmers and ranchers can try new practices and experience the results for themselves on their own operations.

Recommendations Barrier #5:

- **Provide financial assistance to incentivize experimentation.** Provide financial support beyond Farm Bill programs for producers to invest in trying soil health practices.

Financial support that is not tied to Farm Bill programs can be more flexible and encourage experimentation since it avoids the need for projects to rank within the NRCS ranking system. Financial assistance can provide the opportunity to learn without financial risk if a trial fails. It supports learning by doing and producers can convince themselves of the economic feasibility of a practice long term. One example of financial assistance that is working well is the STAR Plus program in Colorado. See Appendix 2 for more information.

- **Build pathways that connect producers with a network of technical assistance providers.**

Depending on the region, technical assistance can come from Extension, NRCS, Conservation Districts, and include private consultants. Technical assistance is most helpful when technical assistance providers seek first to understand producer goals; use soil health assessment results to suggest new practices; and focus on practical implementation. To deliver this technical assistance effectively; training will also be needed. Building this community practice will require time and funding; it is recommended as a longer term solution to work towards.

- **Organize peer-to-peer learning** through conservation districts, NRCS, and other organizations.

Peer-to-peer learning is a valuable way to support farmers and ranchers in the adoption of soil health practices. Connecting with other producers who have documented the economic success of implementing soil health practices on their operations can encourage the adoption of new practices. Often people are focused on experimenting with a new practice for a few years before they begin to collect the economic data. Providing tools and support for capturing economic data early in the process of trying new practices would yield useful data for research and education.

Stakeholder engagement demonstrates a need for sharing real on farm/ranch experiences with the application of soil health principles and practices. Many factors can influence the success of applying these principles and practices, and no one knows better than the ag producers themselves how things work on the land. Peer to peer/mentor-mentee interactions could cultivate relationships enabling people to share knowledge, advice and resources.

Peer-to-peer learning could also be initiated through a video series featuring producer storytelling about their experience, including economic impacts, with implementing soil health practices. An example of this can be found [here](#). It is suggested that these videos be shared broadly.

- **Provide scholarships to attend soil health events and conferences.**

Producers are often inspired to try out new soil health practices after attending soil health events and conferences; but sometimes need a nudge to attend these events. Relatively small scholarships can encourage this. Examples of this can be found through Holistic Management International, Quivira Coalition, and other state Departments of Agriculture. This is something that could be offered by the Wyoming Department of Agriculture, Conservation Districts, and other organizations.

Appendix 1: Education Working Group Members

- **Arapahoe Ranch**
 - Lorre Hoffman (Project Coordinator)
- **Central Wyoming College**
 - Brad Tyndall (President)
 - Ethan Page (Faculty of Local Food and Agriculture)
 - Keith Duran (Instructor of Agriculture)
- **Conservation Districts**
 - Amanda O’Keefe (District Manager, Washakie County Conservation District)
 - Cathy Rosenthal (District Manager, Lower Wind River Conservation District)
 - Cheyenne H. Love (District Manager, Campbell County Conservation District)
- **Powder River Basin Resource Council**
 - Pennie Vance (Ag & Local Foods Organizer)
- **USDA NRCS**
 - Jeff Goats (State Soil Scientist)
 - Catherine Hadley (State Agronomist)
 - Christopher Bovè (District Conservationist, Laramie Office)
 - Keela Deaton (District Conservationist, Sundance Office)
- **Wyoming Food Coalition**
 - LeRoy Jons
- **Wyoming Wheat Growers Association**
 - Marti Hubbs (Executive Secretary)

Appendix 2: Overview of STAR and STAR Plus

Soil health programs are developing at the State level across the arid West to address barriers and opportunities to the implementation of soil health practices similar to those identified in Wyoming. One such model is STAR (Saving Tomorrow's Agricultural Resources). Adoption of the STAR program is included as a cross-cutting recommendation in the Wyoming Roadmap for Healthy Soils.

Originally developed by Champaign County Soil and Water Conservation District (CCSWCD) focusing on the Illinois Nutrient Loss Reduction Strategy, STAR is now also administered in several states, including Colorado. In Colorado, STAR evaluates 11 different cropping systems and grazing lands for soil health and serves as a complementary tool to the more robust STAR Plus program.

The STAR Rating system is an important, innovative, and simple framework that allows farmers and ranchers to evaluate their current production system, identify areas for improved management to increase soil health, document their progress, and share their successes. The evaluation system assigns points for management activities on an annual basis and scores are converted to a 1 to 5 STAR Rating, with 5 STARs indicating commitment to a suite of practices based on principles proven to improve soil health, water quality and water availability.

Colorado's STAR Plus program builds on this framework to offer a comprehensive approach that encourages the adoption of new soil health practices. Developed by CDA, the STAR Plus program provides financial and technical assistance to producers as they implement new practices on one field over three years and consider adopting them across their operation. Participants gain familiarity and expertise with new practices and an increased understanding of the environmental and economic outcomes associated with them. After three years, they are provided with information on carbon, water, and economic outcomes, and a primer that sets them up to participate in new opportunities, including new markets for their products, carbon and payments for ecosystem services (PES) markets, EQIP, CSP, and other forthcoming opportunities. STAR Plus also provides significant capacity support, equipment grants, training and other support to CDs and EEs so they can provide technical assistance to landowners in a new way. These CDs and EEs provide the trusted local support and knowledge to ensure producer success. Finally, facilitated peer-to-peer learning, outreach, and education is provided to these cohorts of STAR Plus participants. The program is set to expand across the state to include 30 additional CDs and EEs (covering approximately two-thirds of Colorado CDs), specifically engaging underserved communities, and solidifying understanding of the carbon and water benefits of the healthy soil practices.

The Colorado STAR Plus program grew out of a stakeholder process similar to the process conducted by WCHS. The Colorado process was launched by the Colorado Department of Agriculture and other partners in 2019 and was facilitated by the Colorado Collaborative for Healthy Soils. It involved more than 250 stakeholders and resulted in passage of HB21-1181 and SB21-235, which authorized and funded the launch of a state soil health program based around STAR. This state stimulus funding and additional grant funding received from the Gates Family Foundation, Colorado Department of Public Health and the Environment, Colorado Water Conservation Board, NFWF, and NRCS have enabled the launch of the STAR Plus program.