

Colorado's SOIL HEALTH Resource Guide



Collaborative. Informative. Innovative.



Photo by Amber Weber

Table of **CONTENTS**

- 03** Soil health resource guide mission, partner and sponsor information.
- 06** Colorado organizations that are leading the charge in soil health.
- 16** Nationwide organizations that bring maximum relevancy to Colorado Soil Health.
- 21** Additional Resources

ABOUT

Purpose and support of the soil health guide.

By the year 2050, our soil will be the foundation of a doubled world population. While this staggering statistic can feel like a lifetime away, the year 2050 is only thirty harvest and livestock seasons away. The innovative strides towards this goal have been astonishing, yet the one major ecosystem Colorado has been slow to look at is soil.

The Soil Health Resource Guide is designed to be a collaborative place for resources and ultimately see what gaps are missing in soil health across Colorado. Capturing all resources is difficult, so your organizations that have soil health expertise to offer and would like to be featured in this guide please reach out to CCHS. The iteration of this guide has been sponsored by the Lower Arkansas Valley Water Conservation District's soil health division.



**LOWER ARKANSAS VALLEY
WATER CONSERVANCY DISTRICT**
Water and Soil Quality Division



Colorado Collaborative for healthy soils

CCHS is a bottom up and big tent organization bringing the agricultural community together around soil health. These voices have collaborated to find a seat at the table to discuss the future of Soil Health and Colorado's role in that future.

The Knowledge Sharing Work Group was created under the CCHS umbrella with the intent of acting as a hub of Colorado soil health information, then sharing this information via an interactive and robust framework. This document is meant to be shared and utilized where needed and added to in an effort to maintain a central go-to for soil resources.

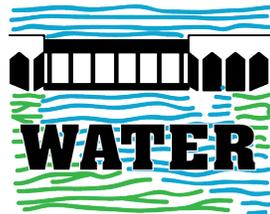
"It's never too late to start, and you are never too old to learn."

SUPPORT

Financial Sponsor



**LOWER ARKANSAS VALLEY
WATER CONSERVANCY DISTRICT**
Water and Soil Quality Division



Lower Arkansas Valley
WATER CONSERVANCY DISTRICT
Serving Pueblo, Otero, Bent, Crowley, and Prowers Counties

Collaborative Partners



Audubon



ACKNOWLEDGEMENTS

We would like to acknowledge all of the collaborators on this ever-growing project. The Colorado Collaborative for Healthy Soils and the Colorado Coalition to Enhance Working Lands were the parent organizations of which this concept was born. Utilizing the broad network and committees under both organizations, provided the necessary support, knowledge, and resources for this document. It is our collective hope that this guide will provide support and resources to those in the soil health/regenerative agriculture community.

This is the second iteration of the Resource Guide and it is not complete! Edits, contributions, and feedback was given from a number of individuals and organizations to get to this version. With additional contributions, collaboration, and sponsorships, a third edition can be published with even more resources and breadth and would also include a smoother flow through the guide. If you would like to submit additional resources to be considered for addition to this document, please email arkvalleywps@gmail.com. Work for the next round of edits will resume in the fall of 2021 and will conclude December 2021 to be published in 2022.



Additional Notes

The resources in this document are organized first by state resources, including those commonly known places to check out in addition to ones that are lesser known. Next national resources are included to get a general sense of what is happening across the country, despite climate and soil differences, to observe programmatic and practices outside of our farm and state borders. Last are additional resources including soil testing, markets, and funding.

"We know more about the moon and the stars than we do about the soil beneath us"

Cindy Lair

COLORADO DEPARTMENT OF AGRICULTURE

Colorado Department of Agriculture is truly a partner to agriculturalists and soil health supports the Department's vision "that Colorado agriculture be strong and vibrant, a key driver of the state's economy, and recognized worldwide for its safe and abundant supply of high-quality food and agriculture products." The Colorado Department of Agriculture has been actively engaged in soil health through a variety of avenues including the Colorado Collaborative for Healthy Soils and their work on a soil health initiative.

SOIL HEALTH INITIATIVE

"The Colorado Soil Health Initiative will assist agricultural producers in improving the productivity and resilience of their land. In partnership with the USDA Natural Resources Conservation Service (NRCS), state Conservation Districts, Colorado State Conservation Board, Colorado Water Conservation Board, Colorado Water Quality Control Division, Colorado State University and the Colorado Agricultural Experiment Stations, funding will be leveraged to award new Healthy Soils Matching Grants to Colorado ag producers. Soil Specialists will help foster farmer to farmer learning, host workshops, and help producers connect with new market opportunities.



BACKGROUND

The Soil Health Initiative began as a grassroots effort from the state's Conservation Districts and was voted into action by the Colorado Association of Conservation Districts in 2018 and 2019. Commissioner of Agriculture Kate Greenberg made the healthy soil vision a leading strategy for achieving the agency's mission to foster responsible stewardship of the environment and natural resources. The Colorado Department of Agriculture (CDA) has spent more than a year engaging in a robust stakeholder process through the leadership of the Colorado Collaborative for Healthy Soils (CCHS) to gather input from agricultural groups and individual farmers and ranchers from across the state. Read the CCHS Annual Report.



COLORADO DEPARTMENT OF AGRICULTURE

PARTICIPATION

Participation in the Soil Health Initiative and all the resources provided will be entirely voluntary. CDA acknowledges that many agricultural producers are already engaged in soil stewardship of some sort. Through the initiative and partnership with CSU and NRCS, CDA will offer assistance to farmers and ranchers interested in building on what they are already doing. Improving soil health can offer numerous important co-benefits such as reducing water quality impacts, enhancing the capture of available moisture, and creating access to private ecosystem services markets."

<https://ag.colorado.gov/conservation/soil-health>



Photo by Emily Sierra through the CDA Photo Contest

COLORADO COALITION TO ENHANCE WORKING LANDS

The Colorado Coalition to Enhance Working Lands (CO CEWL) was built on supporting land managers and ag producers through an interactive platform, education, and robust resources. CO CEWL’s purpose is to “improve the resilience and productivity of Colorado to create viable agricultural businesses and rural communities, protect open space, and increase the ecosystem service benefits these lands provide to the people of Colorado.”

RESOURCE HUB

Whether a producer has converted to regenerative strategies or is new to the idea, CO CEWL has a robust set of resources at the disposal of each visitor. From conservation easements, to financing and education, to water this is a natural stop for resources. <https://www.cocewl.org/resources.html>



Photo by [Yuriy Bogdanov](#) on [Unsplash](#)



PRODUCER SPOTLIGHTS

Colorado Producers are the lifeblood of our communities, state, and nation. To see what others are doing across Colorado, please visit <https://www.cocewl.org/stories.html>

COLD HARBOUR INSTITUTE

The Cold Harbour Institute aims to educate and empower community members of all ages to make an impact in sustainability and regenerative solutions for health of bodies, land, and communities. The home of the institute is on a 334-ranch rooted in Gunnison, Colorado. The ranch brings students, researchers, scientists, and community members all together to implement solutions. The Institute has a close partnership with many groups including Western Colorado State University, National Resources Conservation Service, various farms, and the Savory Institute.

REGENERATIVE NETWORK

The Cold Harbour Regenerative Network demonstrates practical regenerative practices while opening opportunities for all stakeholders to get involved. The goal of the Regenerative Network is to facilitate these practices statewide. To participate in workshops, purchase valuable resources, and learn more, please visit:

<https://www.coldharbourinstitute.org/coldharbour-regenerative-network.html>



Photo by Mindy King through the CDA Photo Contest



SOIL HEALTH PRACTICES

The research at Cold Harbour Institute is led by community needs and regional inputs. Many of the leading issues such as drought and erosion all lead back to soil health practices. The Cold Harbour Institute recognizes this tie and centers research around soil and ultimately, rangeland management.

<https://www.coldharbourinstitute.org/research-blog/category/soil-health>

COLORADO STATE UNIVERSITY

In 1862 the Land Grant Mission was passed to focus on state specific needs as they associated with agriculture, science, military science, and engineering all while including classical studies. As a land grant university, Colorado State has set a mission to provide resources on soil health as it pertains to agriculture, natural resources, forest services, and engineering.



Photo by the Applegate Group Inc.

CSU RESEARCH PROGRAMS AND STATIONS

IN-HOUSE RESEARCH

Research Programs Directory

<https://soilcrop.agsci.colostate.edu/research-programs/>

Program Areas

<https://soilcrop.agsci.colostate.edu/program-areas/>

CO Small Acreage Management Stewardship Courses

<https://www.online.colostate.edu/badges/land-stewardship/>

Involvement

<https://agsci.colostate.edu/connect/involved/>

EXPERIMENTATION STATIONS

Agricultural Research Centers

<https://agsci.colostate.edu/research-centers/>

ARDEC, Fort Collins

<https://agsci.colostate.edu/research-centers/>

Arkansas Valley

<https://aes-avrc.agsci.colostate.edu/>

Eastern Colorado

<https://aes-ecrc.agsci.colostate.edu/>

Plainsman

<https://aes-prc.agsci.colostate.edu/>

San Luis Valley

<https://aes-slvrca.agsci.colostate.edu/>

Southwestern Colorado

<https://aes-swrc.agsci.colostate.edu/>

Western Colorado

<https://aes-wrc.agsci.colostate.edu/>

COLORADO STATE UNIVERSITY EXTENSION

In 1908, the office of engagement at Colorado State wanted to serve the community with the information that was being taught in the college. The CSU extension office helps translate educational knowledge into practical information to help solve problems in the daily lives of local communities.

AREAS OF ENGAGEMENT

Agriculture

<https://extension.colostate.edu/topic-areas/agriculture/>

Animal Health

<http://veterinaryextension.colostate.edu/index.shtml>

Drought

<https://drought.extension.colostate.edu/>

Energy

<http://ruralenergy.colostate.edu/>

Insects

<https://extension.colostate.edu/topic-areas/insects/>

Natural Resources

<https://extension.colostate.edu/topic-areas/natural-resources/>

Nutrition, Food Safety & Health

<https://extension.colostate.edu/topic-areas/nutrition-food-safety-health/>

Small Acreage Management

<https://sam.extension.colostate.edu/>

Water

<https://extension.colostate.edu/topic-areas/water/>

SOIL RESOURCES

TOPICAL RESEARCH

Managing Cattle Impacts When Grazing on Wet Soils

<https://extension.colostate.edu/topic-areas/agriculture/managing-cattle-impacts-when-grazing-on-wet-soils-1-634/>

Controlling Soil Erosion from Wind

<https://extension.colostate.edu/topic-areas/agriculture/controlling-soil-erosion-from-wind-0-518/>

<https://extension.colostate.edu/docs/pubs/crops/xcm180.pdf>

Nitrogen Management

<https://extension.colostate.edu/docs/pubs/crops/xcm172.pdf>

Diagnosing Saline and Sodic Soil Problems

<https://extension.colostate.edu/topic-areas/agriculture/diagnosing-saline-and-sodic-soil-problems-0-521/>
<https://extension.colostate.edu/topic-areas/agriculture/managing-saline-soils-0-503/>

<https://extension.colostate.edu/topic-areas/agriculture/managing-sodic-soils-0-504/>

Small Acreage Management Newsletter

<https://sam.extension.colostate.edu/small-acreage-management-newsletters/>

TOOLS

Biochar Application in Colorado

<https://extension.colostate.edu/topic-areas/agriculture/biochar-in-colorado-0-509/>

Field EC Mapping: A New Tool to Make Better Decisions

<https://extension.colostate.edu/topic-areas/agriculture/field-ec-mapping-a-new-tool-to-make-better-decisions-0-568/>

Selecting an Analytical Laboratory

<https://extension.colostate.edu/topic-areas/agriculture/selecting-an-analytical-laboratory-0-520/>

Soil Testing

<https://extension.colostate.edu/topic-areas/agriculture/soil-testing-0-501/>

COLORADO STATE LABS

CSU has a Soil, Water & Plant Testing Lab that can test soil and allow individuals to understand the composition of their soil. The information in these tests will allow for comprehensive decisions to be made regarding the entire cropping system. CSU works to track the progress of the soil and offers multiple testing discounts to the individual.

<https://extension.colostate.edu/docs/pubs/ag/soiltest-hort.pdf>

TESTING FACTORS

Many types of chemical solutions may be used to extract nutrients from soil in the laboratory. The key is to find one that will extract an amount of a nutrient proportional to what a plant extracts. To determine this, experiments are carried out in the greenhouse where plants are grown in pots on soils typical of those to be submitted for fertilizer recommendations. One can use these fertilizer recommendations to enhance the health of their soil.

<https://extension.colostate.edu/topic-areas/agriculture/soil-testing-0-501/>



Photo by [Ousa Chea](#) on [Unsplash](#)



Photo by Colorado State University

EXAMPLE TESTS

The Colorado State University Laboratory tests for soil's pH balance. This balance relies on the levels of soluble salts, organic matter, nitrate nitrogen, phosphorus, potassium, zinc, iron, copper, manganese, lime and the soil's texture. These are all factor in the pH balance of soil, if the pH is not in the correct range then the soil will not supply the crops with the correct nutrients they need to grow and produce.

<https://extension.colostate.edu/topic-areas/agriculture/soil-test-explanation-0-502/>

MAD AGRICULTURE

Mad Agriculture works from head to heart, poetry to science, financing to markets, and soil to shelf to catalyze a regenerative revolution in agriculture that is wonderful, just, and inescapable. They work to help farmers thrive economically and ecologically. Financial resources are extremely important in soil enhancement and these are two opportunities to explore.

THE PERENNIAL FUND

The Perennial Fund is a loan to assist farmers who use regenerative practices to expand their certified organic acreage. Frustration often occurs when traditional financing options do not support

regenerative practices/farmers. Because Mad Ag strives to champion "farming families and rural communities dedicated to organic agriculture [they] deserve deeper support and equitable sharing of risk when producing healthy food and ecological benefits for all people to enjoy".

<https://www.theperennialfund.com/how-it-works>



Photo by Jennifer Nichols through the CDA Photo Contest



CROP AND CARBON MARKETS

Mad Agriculture works as a connection between farmers and a variety of markets such as crop and carbon. Mad Ag plays an active role in farm planning which aids in management practices to restore health to the land and premiums can be available if done right. Monetizing the hard work farmers put into their operation is an added benefit that Mad Agriculture can help with.

<https://madagriculture.org/markets-1>

COLORADO ASSOCIATION OF CONSERVATION DISTRICT

The Colorado Association of Conservation Districts' purpose is to provide leadership and grassroots support to the citizens of Colorado in order to ensure the "healthy, safety, and welfare of Colorado Citizens through conservation ethics". Through the 76 districts in Colorado, programs, funding, and outreach is provided to support soil health practices and dialogue state-wide. <https://www.coloradoacd.org/about-us.html>

CONSERVATION DISTRICT HUB

CACD hosts a platform for all conservation districts involved. This platform has the websites for each conservation district in Colorado that is a part of the association. Each conservation district has different programs that are related to soil health making this central hub a great starting point for looking through the various regions in Colorado.

<https://www.coloradoacd.org/conservation-districts.html>

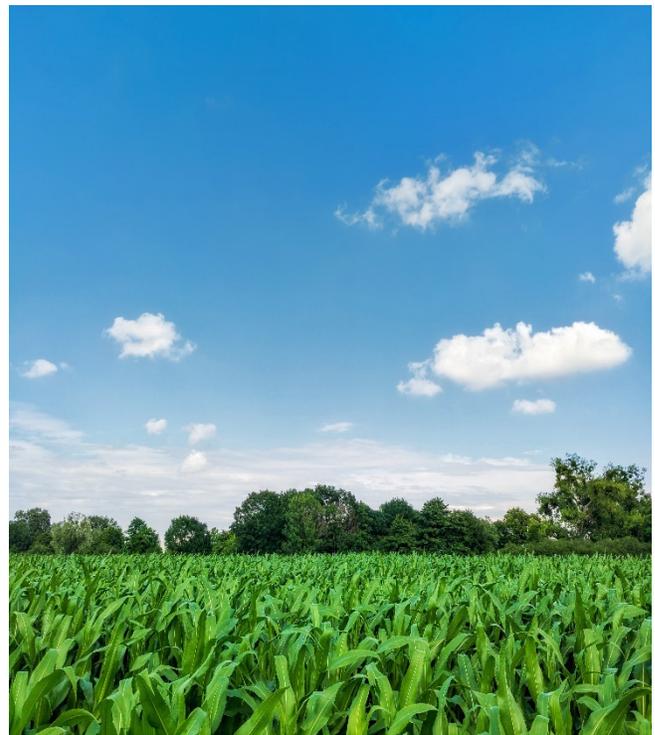


Photo by [Lukasz Szmigiel](#) on [Unsplash](#)



FOCUS

The Colorado Association of Conservation District's goal is to provide outreach, education, and support to landowners as they steward the natural resources in their care. In an effort to provide this, CACD has a number of events, materials, and information at the tip of the fingers that are easy to locate, view, and utilize.

LOWER ARKANSAS VALLEY WATER CONSERVANCY DISTRICT

While soil health may not immediately rise to the top of projects a water conservancy district would participate in, Lower Ark's mission in part, is to participate in water-related projects that embody thoughtful conservation, responsible growth, and beneficial water usage. With the mission in mind, Lower Ark set out to tackle water quality concerns and from that was born the soil health initiative by the District to work on a soil and water quality nexus. Lower Ark is involved in state-wide activities to promote soil health and water quality efforts. <http://www.lavwcd.com/>

SOIL HEALTH DIVISION

LAVWCD's soil health and water division works relentlessly to increase efficiency in agricultural production. The division created a video series hosted on their story map as well as their YouTube channel. In addition to digital media, the District is the home to a soil testing lab and various soil resources.

<http://www.lavwcd.com/soil-health.html>



**LOWER ARKANSAS VALLEY
WATER CONSERVANCY DISTRICT**
Water and Soil Quality Division

DEMONSTRATION PLOTS

In 2016, water quality became a focus of the District which was later joined by a soil health initiative in 2018 and a program was created in 2019. Demonstration plots have allowed Lower Ark to partner with producers as experts to investigate the nexus between both soil and water quality. Lower Ark works collaboratively with state, federal, and local agencies as well as other preservation methods including conservation easements which protects beauty, open space, agricultural practices, and the rural way of life.



Photo by Amber Weber

SOUTH DAKOTA SOIL HEALTH COALITION

The South Dakota Soil Health Coalition is a leading Soil Health resource across the United States. Established in 2015, this organization has brought together leaders in Soil Health across their state to increase sustainable agriculture production through diversification and improved soil health. <https://www.sdsoilhealthcoalition.org/>

SOIL HEALTH VIDEOS AND AUDIO RESOURCES

South Dakota Soil Health Coalition has curated an audio and video library housing of soil health practice testimonies. The audio shares Soil Health Tips created to cover topics such as soil microorganisms, salinity, sampling, biological indicators, and much more. The videos share profiles that were intended to promote the adoption of Soil Health Practices in all climates throughout South Dakota. Many of the climates listed in these profiles are also those that many across the Midwest encounter.

Audio- <https://www.sdsoilhealthcoalition.org/educational-resources/audio/>

Video- <https://www.sdsoilhealthcoalition.org/educational-resources/video/>

EDUCATIONAL RESOURCES	TECHNICAL RESOURCES	SOIL HEALTH CAMPAIGN
<p>The organization has many educational resources equipped with vocational education material to endless publications with information on best practices.</p> <p>https://www.sdsoilhealthcoalition.org/educational-resources/soil-health-buckets/</p>	<p>The Coalition has given their stakeholders the most technical information they can find to ensure they are addressing all concerns and properties associated with the soil. These resources include handbooks, mentor networks, assessment cards, and many more resources that can directly be applied to any operation.</p> <p>https://www.sdsoilhealthcoalition.org/technical-resources/</p>	<p>The “Our Amazing South Dakota Resources” campaign was created with the goal of better communicating the importance and value of grasslands and soil resources throughout the state. This attempts to show what the South Dakota farmers and ranchers are doing to protect and enhance these resources.</p> <p>https://www.sdsoilhealthcoalition.org/educational-resources/our-amazing-south-dakota-resources/</p>

National Resources

U.S DEPARTMENT OF AGRICULTURE

The USDA believes that healthy soil is the foundation of productive, sustainable agriculture. Managing for soil health allows producers to work with the land – not against – reducing erosion, maximizing water infiltration, improving nutrient cycling, saving money on inputs, and ultimately improving the resiliency of their working land. The following resources are the focus areas of the department regarding Soil Health.

PRINCIPLES OF SOIL HEALTH

1. Minimize Disturbance – limit tillage, rotate livestock, & optimize chemical inputs.
2. Maximize Soil Cover – use organic mulch and plant cover crops.
3. Maximize Biodiversity – plant diverse cover crops, use diverse crop rotations and integrate livestock.
4. Maximize Presence of Living Roots – reduce fallow and plant cover crops.

<https://www.farmers.gov/consERVE/soil-health>

PRACTICES FOR WORKING LAND

The link below contains short videos that are applicable and resourceful when it comes to applying soil health practices directly to the field. The four major areas of research are No Till or Reduced Till, Cover Crops, Rotational Grazing, and Crop Rotation. A farmers blog is available to help add firsthand insight on what is working across the US.

<https://www.farmers.gov/consERVE/soil-health>

FINANCIAL RESOURCES

There are many financial resources that come through the USDA that are used for Soil Health & Production enrichments. These financial resources are categorized as Farm Loans. Farm Loans can be used by many people for youth, Native American tribes, and agriculture projects. The loans are put in place to help people plan for a new farm, provide the finances to buy new equipment to further the health of the soil, and increase the agriculture productivity for future generations.

<https://www.farmers.gov/consERVE/soil-health>

NATURAL RESOURCES CONSERVATION SERVICE

The NRCS is a branch of the USDA and comes from a long history of helping people with the land. What first started as the Soil Conservation Service was changed in 1994, to the NRCS to incorporate a holistic view at land stewardship. The NRCS offers many unique services, tools, and resources related to conservation below are those related to soil health.

SOIL HEALTH HUB

The soil health HUB is a central location on the NRCS site which most information pertaining soil health is housed under. Here there are countless links that help people unlock the secrets in the soil including microbial information, best management practices, nationwide practices, and much more. The landing page can be found here: <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health/>



AREAS OF RESEARCH

Web Soil Survey

<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

Soil Health Theater

<https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/soils/health/?cid=stelprdb1048858>

Learning Resources

<https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/soils/health/?cid=stelprdb1048859>

Learning From Growers

<https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/soils/health/?cid=stelprdb1048860>

News Media Releases

<https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/soils/health/?cid=stelprdb1048861>

Partner Resources

<https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/soils/health/?cid=stelprdb1143028>

Soil Health Science

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>

AUDUBON ROCKIES CONSERVATION RANCHING

The National Audubon Society protects birds, but they do so much more than that. Through "science, advocacy, education, and on-the-ground conservation, state programs, nature centers, chapters, and partners" allow Audubon to thrive and promote their mission of conservation in a holistic way. Land is an important piece to protecting bird conservation.

www.rockies.audubon.org/about



Audubon | ROCKIES

RANCHING INITIATIVE

Audubon Rockies Conservation Ranching Initiative is a value added market based certification that allows producers who commit to being bird friendly to use the National Audubon Society's logo, marketing material, and enjoy the support of the Audubon membership across the nation. Audubon of the Rockies also helps landowners by supplying free soil and avian monitoring, enlist agency partners, and livestock production specialists to provide technical assistance to meet initiative protocols and improve forage quantity/quality over time. Participants are eligible for priority enrollment in some federal or state cost-share and incentive programs. For those that direct market their cattle, the initiative can expand market exposure and provide more product differentiation. A known conservation brand will help tell the story about your operations and the habitat improvement you are making happen for grassland birds. For Colorado producers, we will conduct free soil health monitoring which includes chemical and biological measurements to assess soil nutrient status, microbial biomass, and aspects of the microbial habitat to determine overall soil health.

www.rockies.audubon.org/ranching

HOLISTIC MANAGEMENT INTERNATIONAL

Holistic Management International was created in 1984 with a mission to “educate people in regenerative agriculture for healthy land and thriving communities”. This group has brought together communities to grow and thrive by simply educating farmers and ranchers about the agricultural practices that will strengthen their business, produce healthier food, and improve the environment.

<https://holisticmanagement.org/about-hmi/>

EDUCATIONAL DOWNLOADS

HMI provides free educational materials on planning for grazing, finances, and understanding countless ecosystem processes. Those resources can be found here:

<https://holisticmanagement.org/free-downloads/>



Photo by Chelsea Ellingson through the CDA Photo Contest



TRAINING PROGRAMS

HMI has built a comprehensive training program with specialized steps for your operation. These classes work with your time frame and gauge your individual interest level.

<https://holisticmanagement.org/training-programs/>

SOIL HEALTH INSTITUTE

The Soil Health Institute works to safeguard and enhance the vitality and productivity of the soil through scientific research and advancement. The organization aims to be an umbrella for all individuals and organizations who desire to improve soil health by working together. The Institute believes that soil health is the foundation for regenerative and sustainable agriculture. SHI works to provide programs, education, training, and policy to producers in many states nationwide.

PROGRAMS

In the link provided below, SHI programs available are described including a business case, a developing soil health evaluation program, farmer education/training, research, impact assessment, policy, and consumer education.

<https://soilhealthinstitute.org/programs/>



Photo by [Dylan de Jonge](#) on [Unsplash](#)



SOIL HEALTH 360

The Soil Health Institute provides the Soil Health 360 which is a news outlet that pulls all soil health news to one place. The news includes news, magazines, websites, research studies, bulletins, press releases, blogs, podcasts, videos, and producer stories.

<https://soilhealthinstitute.org/soil-health-360/>

ACRES USA ECO FARMING DAILY

Acres USA is a uniquely situated magazine because it is a magazine truly dedicated to regenerative and vibrant agriculture done by focusing on the ecological and economic benefits of the system. Because Acres USA is dedicated to education, farmers, ranchers, consultants, etc. are the content creators. They live this day in and day out and bring it to you.

PUBLICATIONS

In digestible chunks of time, the publisher of Acres USA hosts a podcast- Soils Works, Correct the Cause and digs into a variety of soil health topics.

<https://www.acresusa.com/pages/soil-works-correct-the-cause-with-glen-rabenberg-podcast>



Photo by [Raphael Rychetsky](#) on [Unsplash](#)



ECOFARMING DAILY

In Eco Farming Daily, a variety of resources can be found from webinars and podcasts to articles, this is a resource that can help farmers and ranchers alike.

<https://www.ecofarmingdaily.com/>.



Additional Resources

HANEY TEST

The Haney test is a tool utilized for determining nutrients available in the soil that is different from a conventional test in that a conventional test measures what is missing in the soil and Haney measures what is available for soil microbes to utilize at the time of the test.

UNDERSTANDING A HANEY TEST

Results of the Haney test can provide information regarding soil organic matter, soil respiration, available nutrients, and other indicators. The YouTube videos here describe in more depth and detail what this test can demonstrate for a producer.

<https://youtu.be/qQ3tI-KwgEE>

<https://www.youtube.com/watch?v=buWErVOQSTw>

PLFA TEST

PLFA, or phospholipid fatty acids, is a method used to test the microbes within a soil sample. According to Ward Laboratories, PLFA is a snapshot of community structure and abundance at the time of sampling. As environmental conditions such as pH, temperature, and moisture change so does the microbial community. These communities are also influenced by soil type, organic matter, intensity and type of tillage, crop rotations, cover crops, and herbicide or pesticide applications. The ability of microbial communities to change rapidly provides producers with a tool to compare agricultural management techniques with respect to overall better soil health and fertility."

OUTCOMES OF TEST

Phospholipid fatty acids (PLFA) are found in the cell membranes of living organisms and are used to estimate the living microbial biomass in your soil. Different kinds of cells have unique biomarkers, or signature fatty acids, which helps identify the presence or absence of various microbial groups of interest. PLFA test results are a snapshot of your microbial community structure and abundance at the time of sampling.

<https://www.youtube.com/watch?v=buWErVOQSTw>

https://youtu.be/fuSstyKh3_o

https://www.youtube.com/watch?v=ueD_4yvnWq0

GREEN COVER SEED

Green Cover Seed's mission is rooted in regenerative agriculture in hopes to provide a bright future for the coming generations. Green Cover integrates farming experience with research and development. Green Cover is a trusted company who not only works to distribute seed, but to educate the agriculture community about no-till and cover cropping practices.

GREEN SEED COVER COLORADO REPRESENTATIVES

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RESOURCES

Green Cover Seed Offers a wide range of resources and has created an extensive soil health library. Green Cover seed also distributes content through their blog and webinar series. Check it out below!

Blog: <https://greencoverseed.com/blog/>

Resources: <https://greencoverseed.com/resources/>

Soil Health Resource Guide: <https://greencoverseed.com/category/shrg/>

Alternative Crops

<https://greencoverseed.com/category/alternative-crops/>

Helpful Links

<https://greencoverseed.com/category/helpful-links/>

Mycorrhizal

<https://greencoverseed.com/category/mycorrhizal/>

Beneficial Insects / Pollinators

<https://greencoverseed.com/category/beneficial-insectspollinators/>

Forage

<https://greencoverseed.com/category/forage/>

Soil Health

<https://greencoverseed.com/category/soil-health/>

Additional Resources

SUSTAINABLE AGRICULTURE RESEARCH AND EDUCATION

Sustainable Agriculture Research and Education (SARE), established in 1988, has supported research and education projects through their competitive grants program that promote "sustainable agriculture among farms and ranches across the United States and island protectorate". In addition to practical research and grant opportunities, SARE offers professional development, events, and information about regenerative agriculture.

LEARNING CENTERS

SARE has created learning hubs for soil management, quality, and health. These hubs include fact sheets, bulletins, stimulations, research, infographics, and much more.

Soil Management -

<https://www.sare.org/sare-category/soil-management/>

Soil Quality and Health-

<https://www.sare.org/sare-category/crop->



COLORADO PORTIFIO

The Colorado SARE portfolio holds the impact in research and an overview of the work SNARE is taking place in Colorado.

<https://www.sare.org/wp-content/uploads/CO-state-sheet.pdf?inlinedownload=1>

GRAZING RESOURCES

RANGE SCIENCE INFORMATION SYSTEM

The Range Science Information System is a scientific journal research platform with over 1,400 peer-reviewed bibliographic citations of professional journal articles and documents focused on riparian, weeds, wildlife, vegetation, soils, and rangeland management. The research-based articles contain topics like mixed prairie soils, livestock influence on a stream ecosystem, and nitrogen mineralization.

<https://arc.lib.montana.edu/range-science/search.php?keyword=soils>



Photo by [Mary Hammel](#) on [Unsplash](#)



JORGENSEN LAND AND CATTLE PARTNERSHIP

The Jorgensen family was born in humble beginnings and has grown to roughly 12,000 dry land acres and 850 head of cattle. Over the past 100 years, this family has built their lives off the land and "have sought to improve their land, their cattle, their crop genetics, and the lives of their family, as well as families near them." Their methods have led them to be innovators in their field and leaders in the soil health industry while keeping the family operation and the values it was homesteaded on. At Jorgensen's, they are proud to say, "as a family-run operation, we've always been committed to stewarding land well for the next generation. We preserve our land assets and resources with proven conservation tactics like no-till, crop rotation, cover crops, dedicated wildlife habitats, and cattle grazing."

<https://.com/land-operations/>

Additional Resources

GRAZING RESOURCES

FICKE CATTLE

The Ficke family's holistic farm sustains the grass-fed cattle raised over several generations. Del's focus is to "[get] back to our roots. We're doing things the way my ancestors did, before industrialized agriculture. We're bringing back the wisdom of the past and weaving in modern innovation." Ficke's hybrid cattle are robust and have been raised for forage efficiency. Del strives to produce the best cattle while utilizing his ground to its full capacity, in an innovative and practical manner.



Photo by Stephanie Jo Kennedy through the CDA Photo Contest



<https://brownsranch.us/>



Photo by Michael Santistevan through the CDA Photo Contest

BROWN'S RANCH

GABE BROWN

"We believe in and practice Holistic Management, a part of which is farming and ranching in nature's image. We strive to solve problems in a natural and sustainable way. Improving soil health is a priority and no-till farming has been practiced since 1993. A diverse cropping strategy, which includes cover and companion crops are used. We have now eliminated the use of synthetic fertilizers, fungicides, and pesticides. We use minimal herbicide and are striving to eliminate it. We do not use GMOs or glyphosate. Our ever-evolving grazing strategy allows most of our pastures a recovery period of over 360 days. These strategies have allowed the health of the soil, the mineral and water cycles to greatly improve. In other words, the natural resources have benefited. This results in increased production, profit and a higher quality of life for us. We are moving towards sustainability for not only ours but future generations as well."

MARKETS RESOURCES

INDIGO AG

“The grain market can be volatile. Indigo Marketplace's suite of pricing products allows you to overhaul, adjust, or fine tune your grain marketing strategy while maintaining flexibility and convenience. Marketplace is an online market for buying and selling grain, with tools designed for protection and flexibility. Growers can earn more for the quality of their crops, and buyers can source products that meet their specifications. Indigo Carbon supports farmers in their transition to more sustainable practices, delivering technological solutions and sponsor investments to accelerate soil enrichment.



<https://www.indigoag.com/>

COLORADO PRODUCERS

PRODUCER ADVISORY COUNCIL

Colorado is filled with a robust network of producers. Countless of those producers are working endlessly to steward their soils. The Colorado Collaborative for Healthy Soils has set out the task of identifying those producers and learning about the inspiring work they are doing. While their work has only began, the stories and collaboration thus far are remarkable.

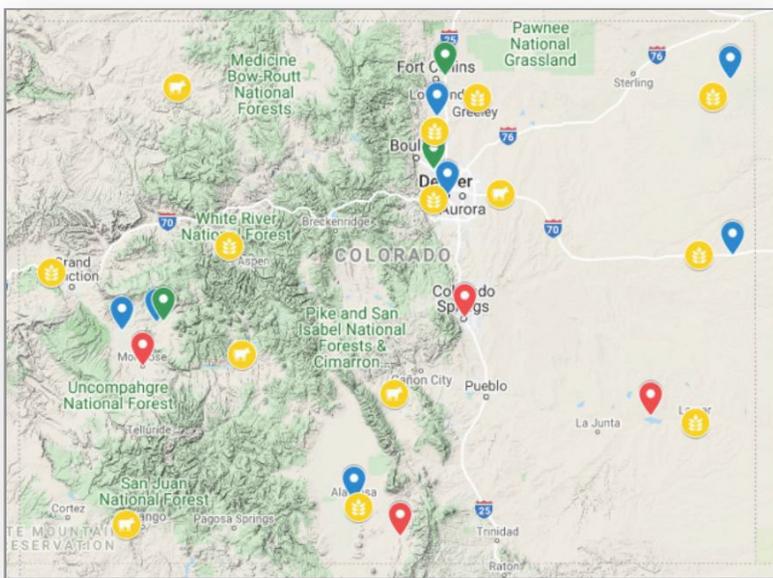


Photo by Colorado Collaborative for Healthy Soils