

SOIL HEALTH MINUTE: HAPPENINGS IN SOUTHERN IDAHO

ISSUE 7 · DECEMBER 2023

Hello! We are Courtney Cosdon (University of Idaho Extension/Natural Resources Conservation Service) and Tasha Harder (Idaho NRCS), bringing you Idaho soil health news and information. In this newsletter, we are sharing resources to encourage the use of soil health practices and working to involve more of our community in soil health events and discussions.



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Upcoming Events

Soil Health 5 for 5 Roundtable Meetings: February 6th, and March 26th, virtual. All are welcome to join! Presenters give 5-minute presentations on soil health topics of interest and then the floor is open for discussion. Here is the link for the next meeting, occurring Feb. 6th at 10am MST:
<https://uidaho.zoom.us/j/4700068861?omn=82184641293>

Idaho Range Livestock Symposium: January 8-10th, 2024. Multiple locations, visit the [Idaho Range Livestock Symposium - University of Idaho Rangeland Center website](#) for more information or to register.

University of Idaho Potato Conference: January 17th-18th, 2024, Pocatello. To register, visit the [Idaho Potato Conference website](#).

Treasure Valley Bean School: January 23rd, Idaho Fish and Game office in Nampa. Registration at 7:30, program at 8am.

Magic Valley Bean School: January 24th, Herrett Center in Twin Falls. Registration at 7:30, program at 8am.

Shoshone Pesticide and Weed Workshop: February 2nd, Shoshone. Email wrsxcd@gmail.com to RSVP by January 25th.

Ontario Soil Health Symposium: February 8th, Four Rivers Cultural Center, Ontario. For more information or to register, visit the [Payette Soil and Water Conservation District website](#).

Magic Valley Soil Health Forum: February 12th, College of Southern Idaho, Twin Falls. This is an annual event for producers to share about their year, discuss topics in a group setting, and to hear local soil health news. More information to come.

Hay and Forage Conference: February 29th, Idaho Falls. For more information, visit the [Idaho Hay & Forage Association website](#).

Resources

- University of Idaho Soil Health: [Soil Health | University of Idaho Extension](#)
- University of Idaho IAMP-Idaho: iamp.uidaho.edu/
- Idaho NRCS Soil Health: [Idaho Soil Health | Natural Resources Conservation Service](#)
- UI Soil Health YouTube: Check out the Idaho 5 for 5 Soil Health Roundtable recordings here! [University of Idaho Soil Health YouTube](#) ★

Soil Health Partner Spotlight



**REGENERATIVE
AGRICULTURE
NETWORK OF IDAHO**

The Regenerative Agriculture Network of Idaho (RANI) exists to inspire the widespread implementation of regenerative agriculture practices with the aim of improving the environmental, economic, and social outcomes of farming and ranching. Through their network of farmers and ranchers, leaders of nonprofit organizations, academic institutions, state and federal agencies, and businesses, RANI supports the long-term viability of farming and ranching in Idaho. Their Farmer Learning Network provides Idaho's agriculture producers with peer-to-peer learning opportunities, resources, mentorship, and general support to explore and expand regenerative and soil health practices. By coming together to share and learn about the benefits and impacts of soil health, they seek to decrease negative environmental impacts and increase resiliency and economic opportunity in the face of an ever-changing environment.

To learn more about RANI, access resources and publications, find out about events, join their Farmer Learning Network, or submit a regenerative agriculture or soil health question, visit their website at www.regenidaho.org!

Event Recap

Soil Health Economics with Pat Purdy

The Regenerative Agriculture Network of Idaho (RANI) hosted a farmer learning event at the Yellow Brick Café in Twin Falls on November 15, focused on soil health economics. The day started with remarks from RANI president David Anderson, followed by updates on the Innovative Agriculture and Marketing Program for Idaho (IAMP-Idaho) project led by the University of Idaho and upcoming sign-ups with Dr. Linda Schott. See more about this in the "Get Involved" section.

Check it out!

The Nature Conservancy: Soil Health Guides

These guides are intended to be introductions to the principles of soil health with a brief overview, some additional resources and readings, and an example of a farmer who has been working with the practice in Idaho. To view, visit the Sustainable Agriculture in Idaho section of the Nature Conservancy's website – the guides are at the bottom of the page, under "Resources". TNC plans to have three more guides completed by the end of the year.

Soil Health Institute: Economics of Soil Health Systems

An economic case study featuring Griff Farms discusses how implementing soil health practices has impacted their bottom line. View the study on the Soil Health Institute website and check out Farm #4 at the bottom of the page.

American Farmland Trust: Soil Health Case Study

A case study, featuring the Purdy family in Picabo, discusses the economics effects of soil health practices on their operation. View Idaho Soil Health Case Study American Farmland Trust and NRCS.pdf

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Event recap Con't

Ellen Yeatman of American Farmland Trust (AFT) and Pat and Nicholas Purdy led us through how adopting soil health practices such as no-till, cover crops and nutrient management has changed Picabo Livestock and benefitted them financially. To slow soil erosion by wind, the Purdys first tried no-till in 2014, and their whole ranch was in no-till by 2018. The machinery, fuel and labor cost savings of no-till implementation, across their 900 acres, resulted in a saving of \$44,325 in 2021. They also reduced costs by eliminating the use of insecticides on their alfalfa. This occurred around the time they changed their nutrient management plan to limit excess nitrate applications, saving the ranch around \$9,600 per year.

Through the adoption of these practices and cover cropping, the Purdys were able to increase soil organic matter to 3%. Pat believes this increase contributed to the yield bump of their barley and alfalfa, creating an additional \$71 per-acre income increase. This year, he received funding from the NRCS to help cover the cost of cover crops, around \$77 per-acre; grazing of cover crops has led to the biggest increase in income per acre for the Purdys. While implementing soil health practices does not come without its costs, such as soil sampling and machinery changes, overall, the Purdys were able to increase their net income per acre by \$65. Continue reading about their journey in the AFT case study, linked under our “Check It Out” section!

Next, Shawn Nield talked about how the soil health conservation practices the Purdys employed addressed their concerns of erosion, lack of soil life, and depleted organic matter. Mike Cothorn, NRCS Soil Conservationist, informed everyone of the various programs and funding opportunities through the NRCS, emphasizing that we are living in an unprecedented time of abundant federal funding for trying out soil health practices, so take advantage! The excellent lunch was provided by the café. Then, Brad Johnson from The Nature Conservancy discussed how they are implementing soil health practices in potatoes on TNC’s newest teaching farm



Figure 1. AFT and Picabo crew.

near Aberdeen, in partnership with Ladd Whalen. They were able to establish a winter wheat cover crop after harvesting potatoes this year. Overall, it was a great day of learning about soil health economics from Idaho producers, a topic we have all been eagerly waiting to hear more about.

We will keep you updated on more learning events from RANI in 2024.



Get Involved!

Innovative Agriculture and Marketing Partnership (IAMP-Idaho) Grant (formerly Climate Smart Commodities Grant)

Sign-ups begin soon!

The University of Idaho has secured a \$55 million USDA-NRCS grant to help farmers adopt climate smart practices on Idaho's major commodity crops including potatoes, barley, beef, chickpeas, hops, sugar beets and wheat. Do you grow any of these crops on Idaho soil? Are you interested in incorporating practices such as cover cropping, reduced tillage, interseeding, nutrient management for reduced nitrogen applications, biochar, or grazing cattle on grounds managed using these practices? Would you like to have funding to help with the costs and risks of adoption? If so, you will be interested in this program.

Here is what you can do to get started:

- + Stay tuned to IAMP-Idaho's website: iamp.uidaho.edu.
- + Look for presentations by IAMP-Idaho personnel at venues like the Idaho Potato Conference this winter.
- + Talk to representatives of any of the implementing groups. These include: your local Soil and Water Conservation district representative, The Nature Conservancy, Nez Perce or Coeur d'Alene Tribal representative, or Desert Mountain Grass fed Beef.

Early adopters and long-time practitioners of one or more of these practices are encouraged to apply.

Both smaller and larger farms are welcome.

Idaho 5 for 5 Soil Health Roundtable Meetings

If you would like to present for five minutes on a soil health practice or subject that you have experience with for the Idaho 5 for 5 Roundtable virtual meetings, please let us know! To view the most recent 5 for 5 presentation, please visit the NRCS Idaho Youtube channel, available here: [Soil Health 5 for 5: February 1, 2023](#)

In the Literature

When a person thinks about soil biology, microbes such as bacteria and fungi are likely the first soil-dwelling organisms that come to mind. On the larger scale, earthworms can be a common indicator of a healthy, biologically active soil. Soil arthropods such as mites, springtails, spiders, millipedes, and beetles are typically not considered in management decisions and might be considered less frequently in the context of soil health.



Literature cont'd

University of Idaho researchers are taking a closer look at soil arthropods. This recent publication titled [Linking agricultural diversification practices, soil arthropod communities and soil health](#) shows that they can be used as bioindicators to assess the effects of crop diversification on soil health. More specifically, incorporating Austrian winter pea or a multispecies cover crop for forage into dryland cereal rotations significantly improved arthropod diversity. Winter pea improved arthropod diversity in different parts of the region (Northern Idaho and Eastern Washington) and is a good first step for building more crop diversity into a chickpea/winter wheat/spring wheat or fallow/winter wheat/spring wheat rotation. Additional information on supporting invertebrates can be found in a recent [publication by Sustainable Agriculture Research and Education \(SARE\)](#) on their website.

Just like soil microbes and earthworms, soil arthropods play a huge role in regulating processes in the soil ecosystem. Soil arthropods break down litter, facilitate nutrient cycling, and contribute to pest and pathogen control by consuming weed seeds and keeping pest populations in balance. They play a role in the formation of organic matter and soil aggregation, and contribute to soil health and plant productivity in agroecosystems.

Soil arthropods are considered soil meso- and macro-fauna, meaning often they are discernable with the naked eye. This makes them a great indicator for biological diversity, such as in the [Idaho In-Field Soil Health Assessment](#). The biological diversity indicator involves observing more than three different types of non-pest organisms within a cubic foot of soil. This indicator is used to evaluate four different soil health resource concerns: soil organic matter depletion, soil organism habitat loss or degradation, compaction, and aggregate instability.

What would you like to see in the "In the Literature" section? Please reach out with any comments/feedback: ccosdon@uidaho.edu and tasha.harder@usda.gov

Soil Health Myth Busters

Myth: cover crops always result in a yield decrease of the following cash crop.

Seeing headlines in the news such as ["Cover crops help the climate and environment, but most farmers say no. Many fear losing money"](#) can be discouraging to producers who are on the fence about adopting cover crops. Implementing cover crops has the potential to lead to yield reduction of the following cash crop due to nutrient tie-up and use of limited water stored in the soil, but there's more to the story.

This particular article focuses on the use of rye cover crops in Midwest states. Rye is a great cover crop species for a handful of reasons: it can germinate in cold weather, the seed is less expensive, and it is a great nutrient scavenger. On the other hand, the release of nitrogen after termination is often too slow to avoid some nitrogen stress for the cash crop in the current year, resulting in yield decreases especially if that cash crop is a heavy nitrogen user. A strategy for improving this is using a species mix. For example, rye plus a legume together can both scavenge nutrients but then breakdown faster, stimulate activity of soil microbes due to the lower overall C:N ratio in the plant residues, and more rapidly cycle nutrients back to the cash crop.

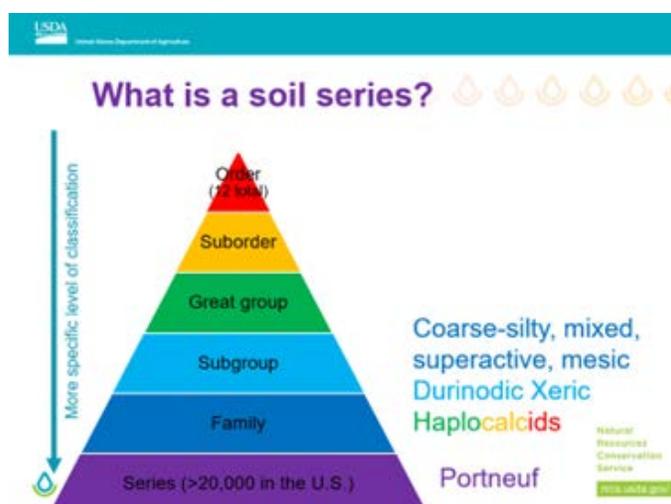


Cost-share programs through the Farm Bill or IAMP-Idaho Grants are an excellent way to offset potential yield losses when learning how to implement new practices and build soil health. Yield reductions can sometimes be seen when producers adopt this practice and are early in their soil health journey. Longer-term use of cover crops (especially in conjunction with other soil health building practices) can improve the overall functioning of soils and counteract these cited drawbacks of adopting cover crops. Healthy soils are able to more rapidly cycle nutrients back to the soil system, capture and hold more water, and are able to infiltrate water better in springtime so that fields can be planted earlier.

Another important point to emphasize is that crop yield does not always correspond to profits. In the paper analyzing regenerative agriculture, Regenerative Agriculture: merging farming and natural resource conservation profitability, versus conventional systems, yield was reported lower in the regen ag system however profits were significantly higher over conventional production systems. This is largely due to the decrease in spending on inputs (fertilizer and insecticides). Some reports on cover crops and yields do not account for the nutrient bank that is building in the soil and the cost savings of keeping nitrogen in the field. On that note, producers may be additionally motivated by the big picture environmental benefits of using cover crops, which are hard to financially quantify, but have huge significance: cleaner waterways and invaluable topsoil staying in place on farms to be available for future generations.

Get to Know Idaho Soils!

The Idaho NRCS Soils/GIS team recently presented a series of “Lunch and Learn” webinars on soil topics and resources. Check out this recording on the Idaho NRCS YouTube channel to learn more about Idaho Soil Series and available web resources.



Thanks for reading!