

# SOIL HEALTH MINUTE: HAPPENINGS IN SOUTHERN IDAHO

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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.



University of Idaho  
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## Upcoming Events

**Virtual Rocky Mountain Soil Health Roundtable:** The Integrated Rocky Mountain-region Innovative Center for Healthy Soils (IN-RICHES) is a regional collaborative effort that reaches across boundaries to bring together diverse stakeholders and leaders in the West to identify a shared vision to improve soil health on agricultural lands across the region. This event is an interactive meeting for folks who couldn't make it to the recent in-person meeting in Colorado. There will be information about the Saving Tomorrow's Agriculture Resources (STAR) program, stakeholder perspectives on soil health and breakout discussions. October 25th from 3:00-4:30pm MT. Register [here](#).

**Soil Health Economics with Pat Purdy:** A half-day learning event put together by the Regenerative Agriculture Network of Idaho (RANI), formerly ICSA, to discuss the economic impacts of regenerative soil health practices in Idaho and to connect with other farmers and ranchers. State experts will also share unique funding opportunities to help implement regenerative practices on your farm. Lunch provided! November 15th, 10am-2pm at the Yellow Brick Cafe, 136 Main Ave N, Twin Falls. Register [here](#).

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## Event Recap

### SE Idaho Soil Health Field Day

Idaho NRCS, along with many partners, helped host a soil health field day in SE Idaho on June 27th in the Fort Hall, Idaho area. The Shoshone-Bannock Tribes Agricultural Resources Management (ARM), Wada Farms, The Nature Conservancy, Simplot Grower Solutions, Roots Potatoes, NRCS Soil Health Division, and local NRCS field offices all collaborated to host a field day for over 60 participants where the focus was largely on reducing soil erosion and building soil health in potato cropping systems.

The first half of the field day took place at Wada Farms in Fort Hall and featured a wind erosion demonstration. Topsoil in this part of the world is predominately very fine sand and coarse silt, which are soil particle sizes that are especially susceptible to wind erosion. Some of the main takeaways from this demo included that a dime's thickness of soil eroding over an acre equates to 8 tons of soil

## Resources

- University of Idaho Soil Health: <https://www.uidaho.edu/extension/soil-health>
- Idaho NRCS Soil Health (**The NRCS has a new website - be sure to bookmark this new link**): <https://www.nrcs.usda.gov/conservation-basics/conservation-by-state/idaho/idaho-soil-health>
- Soil Health YouTube: Check out the Idaho 5 for 5 Soil Health Roundtable recordings here! [https://www.youtube.com/playlist?list=PL6g6ZYcM47s9emP2muvDV4yq\\_FNQwoZoJ](https://www.youtube.com/playlist?list=PL6g6ZYcM47s9emP2muvDV4yq_FNQwoZoJ) ★



### Event Recap Con't

lost per acre. Even in potato cropping systems, steps can be taken to reduce the amount of disturbance that occurs to the soil. For example, reducing tillage by one or two passes compared to previous years, or leaving the field a little bit rough, are steps in the right direction. Altering the timing of tillage can also be impactful to reduce erosion;

Wada Farms has practiced using early season potato varieties versus late season, which changes the timing of harvest and inherent soil disturbance so that it doesn't coincide with the high-speed late-fall winds.

The participants also looked at paired soil pits comparing properties of the same soil (Feltham loamy sand) under different management. One soil pit was in a potato field, and the other was nearby in an area between pivots that for the past several decades has been mostly undisturbed. A notable feature of this Feltham soil series is a subsoil layer that is high in pH and carbonate content.

High pH can impair nutrient availability, so farming this subsoil layer would be very challenging. Between the two soil pits, it was easy to observe how much closer this carbonate-rich layer was to the surface in the cultivated soil, indication significant erosion in the field occurring little by little over many years. This kind of erosion, which occurs all over Southern Idaho, should not be construed as a poor reflection on Wada Farms who have adopted an increasing amount of conservation practices over the past

few decades. Another takeaway from these soil pits was that a little aggregation of sandy soils goes a long way; aggregation of soil particles to just 0.88mm in size significantly decreases erosion potential.

The last portion of the field day was at Whalen Farms in Springfield, where Ladd Whalen shared new practices he has adopted for potato production in collaboration with The Nature Conservancy. One such practice is companion cropping potatoes with peas to increase diversity and incorporate some nitrogen fixing plants. While Ladd used some cultivation passes to manage weeds, he used less tillage

### 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, click [here](#) – 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 [here](#) 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 [here](#).

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## Field day recap Con't



Figure 1. Nick Sirovatka providing discussion on the wind erosion demonstration.

overall to prepare the field for planting. He also planted a pollinator strip through the field to encourage beneficial insects. No insecticides or fungicides were applied on these potatoes, and only a single herbicide application was used.

The field day concluded with Nick Sirovatka running the NRCS rainfall infiltration demo. He compared water infiltration on 5 contrasting soils, two of which came directly from field edges of the day's field sites. While similar in texture and structure, one had additional residues added to the surface and everyone could see the positive difference made by residues on the soil surface, including reduced overland flow and particle detachment.

## Organic Impromptu Field Day with Tim Cornie

Tim hosted the Organic Field Day in Buhl on June 13th. Cornie is a co-owner of 1,000 Springs Mill, a third generation, organic and non-GMO organization that specializes in growing beans, grains, corn and more. On their farm they do not apply fertilizers; instead they rely on a diversified crop rotation and 4,000 sheep who graze residue at the end of the season to recycle nutrients to the soil. Tim is curious about growing crops with health benefits for soil and humans, such as hemp. He had a large influence on the legalization of hemp for production in Idaho, which he now is successfully growing and processing. The field day featured a tour of some of the farmland, including popcorn, hemp, Tibetan purple barley, and black bean fields.

Thousand Springs Mill is looking to work with producers who want to expand their rotation and grow organic buckwheat or beans that would be processed under the 1,000 Springs Mill label. The organic buckwheat they currently produce is highly sought after in Asian markets for the creation of soba noodles. One of their most recent projects includes working on the creation of a gluten free flour mill, so they will be able to offer gluten free products soon. Some of the other crops they grow and process, with just 8 miles from field to processing, include organic popcorn, pinto, black, red, and great northern beans, oats, wheat berries, brown rice and more. Visit their website: <https://www.1000springsmill.com/> to learn more.



Figure 2. Tim Cornie discussing hemp production.



## Get Involved!

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

**Sign-ups beginning this fall!**

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](http://iamp.uidaho.edu).
- + Look for presentations by IAMP-Idaho personnel at venues like IASCD Division meetings this fall.
- + 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.

Click [here](#) for the webpage for the project.

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## In the Literature

Research in the world of soil health is often centered on soil carbon. [This new publication](#) turns the spotlight back on soil nitrogen and its importance in the soil health discussion. Soil health practices can promote diverse sources of nitrogen in the soil ecosystem. These pathways include:

1. nitrogen-fixing rhizobial bacteria,
2. arbuscular mycorrhizal fungi which access inorganic and organic nitrogen and transfer it long distances with their thread-like bodies to the host plant,
3. and the microbial loop – this involves soil organisms (such as protists and nematodes) consuming microbes that are very rich in nitrogen (like bacteria) and excreting excess nitrogen where it can be accessed by plant roots.



## Literature cont'd

Healthy soils have a high N turnover rate (where N is transferring between different forms) to maintain availability for growing crops. Currently there is no one measurement that can adequately reflect the total bioavailable nitrogen in soils. The diversity in the nitrogen pathways is what makes this so difficult.

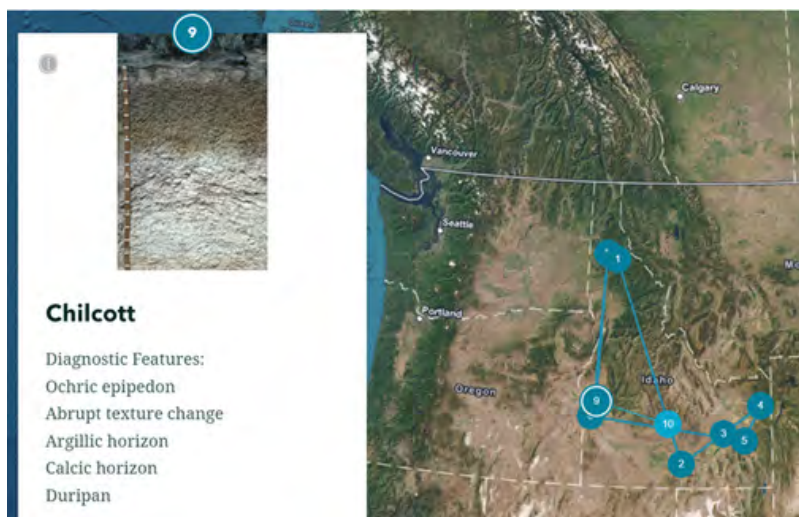
Traditional tests for inorganic N pool size assess only net N mineralization, which is a small portion of the N cycling process. For example, soils could experience very high rates of N turnover yet never accrue substantial standing pools of bioavailable N (such as that reflected on a traditional soil test) due to immobilization of nitrogen. Plants, microbes, and mineral surfaces immobilize N; immobilization often has a negative connotation, but it doesn't mean the N is permanently inaccessible, rather temporarily bound to stay in the soil ecosystem instead of leaching out. An active microbial population cycles the nitrogen back to a plant available form.

Many sources (from local producers to researchers) share that it is possible to reduce synthetic N inputs for crops grown in healthy, well-functioning soils. Realistically this might look like decreasing N fertilizer amounts in small steps and using some synthetic fertilizer alongside some microbially sourced N to meet total crop needs. Decreasing the amount of money spent on synthetic fertilizers can be a major incentive to pursue soil health, in addition to reducing N loading in waterways. Diverse sources of N in the soil ecosystem can also increase the overall resilience of N delivery during drought or other soil disturbances (here's [another paper](#) to check out if you want to read more).

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## Get to Know Idaho Soils!

Take a tour of Idaho's top ten most extensive soil series by area! [Top 10 Soil Series of Idaho](#) ([arccgis.com](#)). A soil series is akin to a species of a soil, and each one is distinctly different from the next in one or more of its properties. Idaho has incredible soil diversity, with over 1800 soil series mapped here to date. For additional photos and lab data on Idaho Soils, see [Explore Idaho Soils](#).



Thanks for reading!