Soil Health is a Group Affair

How can soil health maximize your farm’s potential? A group of four farmers in Northeast Oregon’s Wallowa County are putting their heads together to find the answer to that very important question.

Mark Butterfield, Joe Dawson, Alan Klages, and Kevin Melville each have diverse irrigated cropland operations throughout the Wallowa Valley—each with varying management objectives. Some of them also have rangeland mixed in, where their cattle graze in the summer. But despite the differences, they are discovering that investing in the health of their soil increases productivity and lowers input costs—it’s just a matter of finding the right recipe for success.

“To have healthy, high-functioning soils, NRCS strongly recommends that farmers and ranchers follow the four principles of soil health,” said Nate James, NRCS district conservationist in Wallowa County. “Through our conservation technical assistance program, we are looking at each individual system with these four producers to find which soil health principles are missing or could be improved. These farmers have already started to see changes in their soils, in their crops, and in their bottom line.”
The NRCS’ four principles of soil health are: 1) Keeping the soil covered at all times, 2) Minimizing soil disturbance, 3) Keeping a living root in the soil year round, and 4) Adding diversity above ground for diversity below. Incorporating livestock is also an important component of building healthy soils, and is often referred to as the fifth principle.

Butterfield, Melville, Klages and Dawson are working with NRCS to experiment and implement a soil health management system that makes sense for them.

Butterfield produces hay—primarily export timothy and alfalfa varieties—on about 800 acres in the Wallowa Valley. He also grazes cattle. His primary soil health challenge was finding a better way to break down the sod layer when coming out of five-year rotation of perennial timothy hay.

“I would normally use six to eight passes with tillage equipment to break-up the sod layer before seeding in with alfalfa,” Butterfield said. “Planting a cover crop after harvest gave my cows something to eat, and it completely took out the sod. I saved money on running the tractor less, and more than made up for the seed costs with the gain on my cattle.”

While Butterfield’s solution centered on cover cropping, Melville focused on another soil health principle—keeping a living root in the soil year round. With 700 acres, Melville primarily grows wheat for seed, but he also incorporates peas for seed, canola and barley into his growing operation. He noticed a decrease in his organic soil matter levels over time when he started raising annual grains in fields that had been in a long-term rotation of alfalfa and hay.

“My family has been direct seeding since the mid-80’s, but just no-tilling is not the whole solution,” Melville said. “I want to maintain a high level of organic matter, so we need to build carbon.”

Melville said that even with zero tillage—using the lowest disturbance drill on the market with high-residue crops—the organic matter in his soil is still decreasing, compared to the levels in a perennial pasture or hay crop. To address the problem, he is adopting companion cropping and cover cropping to maintain living roots in the soil as long as possible. Companion cropping is the practice of planting different crops together so that each crop benefits from the characteristics of the other. Just a few benefits of this practice include better pest control, pollination and habitat for beneficial creatures such as beetles.
In addition to building organic matter, Melville believes that keeping a living root in the soil may also help reduce weeds and therefore eliminate the need for herbicide applications.

Klages took a slightly different approach and turned to his cattle for help. His 600-acre operation primarily produces timothy, alfalfa and small grains. He recognized that a fall forage cover crop made a lot of sense for the cattle side of his operation. He said the forage adds excellent weight gain when backgrounding calves, and the cattle also help manage the biomass. Plus, there is a benefit for the following year’s crop.

“I saw my protein levels in hard red spring wheat go up after grazing the fall forage cover crop compared to fields with no prior cover crop,” Klages said.

Dawson saw similar results. He produces wheat and hay and grazes cattle on his 1,200-acre operation.

“It’s a win-win incorporating cover crops with cattle,” Dawson said.

Dawson planted multiple cover crops, including forage corn. Though he was reluctant at first, the corn grew very well, reaching as high as six feet. When he finally turned the field over to his cows, he said they enjoyed it so much, they didn’t want to leave. Dawson plans to try a couple...
profiles in soil health

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hundred acres of similar cover crops next season.

As all four of these producers will agree, experimenting with soil health systems in the Wallowa Valley brings its own unique set of challenges. For one, they are located at high elevations surrounded by the Eagle Cap Wilderness. That means they must negotiate cover crop mixes that have the potential to freeze out during any month of the year. Also, they must find ways for their cover crops to coexist with the wildlife that take advantage of the fall forage before the cattle get a chance to graze it.

“These growers have found that the techniques and fundamentals of soil health are the same here in Oregon as they are everywhere else, but certain cover crop species that work in other parts of the country don’t work within their rotations. We have a lot of learning to do and that’s the fun part, there is no recipe book for our part of the country so were building them as we go” James said.

“We want to replicate the success of the mid-West with what works here,” Melville said. “There’s a lot they do back there that is a no-go in this part of the country.”

Even with the challenges, these farmers are committed to continuing to experiment and try new things on their soil. Long-term, they want to cultivate fundamental changes in their soil that will benefit their entire operation. Whether it’s trying companion planting with wheat and clover, or reducing nitrogen applications by counting on what the soil will provide naturally, they are willing to stay the course and find what works.

Through this forward-thinking group of farmers, NRCS is planning to share the successes and lessons learned with the wider soil health community through presentations, workshops, and field tours.

“There’s been a lot of interest in what they are doing—it’s very exciting,” James said. “I believe their successes will inspire other growers to be proactive in improving their soil health. But it’s imperative to think it through and have a plan. With soil health there is a whole lot more going on out there than you can imagine.”

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