



because it's all about that base



SPREADING THE SOIL HEALTH GOSPEL

By Steve Stuebner

Because soil's the base - the foundation - for life and growing things, healthy soil will be celebrated world-wide this year. And a major vehicle for achieving soil health - no till, direct-seed farming - is catching on in Idaho. Together with our conservation partners, we're actively promoting soil health and its benefits to the land and to agriculture.

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SOIL HEALTH *Cont. from Pg. 1*

The United Nations Food and Agriculture Organization designated 2015 as the "International Year of Soils." The Idaho Ag Summit theme is "Secrets of Soil: agriculture's dirty little secret." Combine these two themes with the NRCS's ongoing Soil Health campaign, and we see a trifecta of forces coming together in 2015 to celebrate the earth's precious, live-giving soil in hopes that we can redouble our efforts to nurture it and preserve it.

The NRCS, Conservation Commission and Idaho's 50 soil and water conservation districts all grew out of the Dust Bowl-era, when millions of acres of soil were lost to drought, over-cultivation and wind storms on a national scale. In Idaho, roughly half of the cropland in the state was suffering from sheet erosion -- 7.2 million acres had lost three-fourths of the topsoil, and wind erosion affected another 7.9 million acres.

Seventy-five years later, Idaho farmers and conservation districts work on a daily basis to reduce erosion, implement best management practices and install conservation projects. Great progress has been made in reducing soil erosion statewide, but work remains to be done, according to the latest soil erosion statistics from NRCS.

On 5.1 million acres of cropland in Idaho:

- Water erosion - average soil loss to sheet and rill erosion is 2.2 tons per acre per year or 11.4 million tons total.

- Wind erosion - average soil losses is 2.7 tons per acre per year or 14 million tons total.

Soil Health advocates see no-till, direct-seed farming, including the use of cover crops, as a promising solution to not only curb soil erosion issues, but also "give back" to the soil. No-till farming allows a diverse set of micro-organisms to thrive in the soil-profile layer, vastly increasing its ability to absorb and retain moisture, store nutrients and combat pests.

"We all grew up thinking that the more we till, the more we fluff up the soil, the better, like roto-tilling the garden in the spring," says Marlon Winger, NRCS state agronomist.

Standing in a farm field in Kuna, Winger demonstrates what happens to the soil when it's tilled. He raises his shovel over his head and slams it into the ground with extreme force. "You see, the first thing is we can't continue to pulverize the soil. It destroys the microbial community that's growing in the soil," he says.

Winger got his "religion" about no-till farming from Gabe Brown, a North Dakota farmer who's been no-till farming with cover crops for more than 20 years. Brown spoke at the 2014 Sustainable Agriculture Symposium in Nampa in November, and more than 375 people -- many of them Idaho farmers -- heard Brown's message.

"It's all about soil health and how much life we have in the

soil," Brown says. "Converting sunlight into dollars. If we have healthy soil, we're going to have clean water, clean air, healthy plants, and healthy people. That's what it's all about for me."

Winger has been preaching the benefits of no-till, direct-seed farming for three years statewide as part of NRCS's Soil Health outreach campaign, and he's starting to see the concept gain traction. "It's amazing, it's really starting to catch on," he says. "We're gaining momentum."

The Ada Soil and Water Conservation District helped build on that momentum by buying a John Deere no-till seed drill that's available for rent in the Ada and Canyon county area to producers who want to try it out. The \$60,000 drill was purchased via a Sect. 319 water-quality grant from the Idaho Department of Environmental Quality.

Since the spring of 2014, the drill has



Soil health expert and evangelist Marlon Winger examines soil to assess its condition.

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been in high demand. It has been used to plant about 1,600 acres in the two-county area. "It's constantly being used -- I'm a bit like an air traffic controller," jokes Paul Woods, manager of the Ada district. "Our intent is not to be an equipment rental business, but to allow our farmers to get some experience with the drill, no-till farming and cover crops."

Brad McIntyre is a Marsing-area farmer who has jumped into no-till farming with both feet over the last several years. He's rented the Ada County drill a lot in 2014, and he's planning on purchasing a drill with his father and brother who run the farm with him. They raise corn, hay, wheat, peas and a variety of cover crops. The cover crops add nutrients to the soil and can be grazed by livestock between cash crops. Gabe Brown and other participants in the Sustainable Ag conference visited McIntyre's place to hear about his experience.

"My point to everyone is do it as much as you can," he says.

A big benefit that McIntyre sees with no-till farming is the time and fuel

savings of not having to till his crop fields. "I'm a least-cost producer," he says. As the organic matter increases in the soil, it retains moisture better. A diverse mix of cover crops add more nutrients to the soil, allowing the micro-organisms in the soil profile to thrive.

He checks the soil for worms and organic matter on a regular basis and likes what he sees. "Our worm population has increased dramatically," he says.

Steve Riggers has been no-till farming in the Camas Prairie near Grangeville for more than 25 years. He got into no-till farming because he also grew tired of tilling fields and spending so much money on fuel and inputs. "It brought the joy of farming back for me. We cut our fuel bill by 40 percent," he says. "You're not doing this senseless plowing over and over. Tillage is not good for the resource. It's been a whole new frontier for me."

About 80 percent of the farmers in the Camas Prairie area are now practicing no-till farming. "It's not an easy deal, there's a lot to learn," says Kevin Seitz, NRCS district manager in Nezperce, Idaho.

NRCS officials assist farmers with determining a diverse cover crop seed mix to plant between cash crops. "You need to know what you're planting," McIntyre says.

Drew Leitch, a longtime no-till farmer, is one of five farmers participating in a Cover Crop Demonstration Project in Lewis County. Last May, he provided a tour of his cover crops. He had three different test strips planted next to each



Ada Soil and Water Conservation District Chairman Glen Edwards in the District's no till drill.

other with different seed mixes. The cover crop mix includes spring lentils, common vetch, rapeseed, flax (not phlox), radish, peas, millet, barley, clover, triticale, soybean, sunflower and oats.

"The clovers, soybeans, vetches, peas and lentils are legumes that will fix atmospheric nitrogen in the soil," says Seitz of the NRCS. "Turnips, radishes, rapeseed and canola were planted to help break the compaction layer in the soil from many years of tillage."

Leitch has beef cattle on his farm, and he plans to graze the cover crops to add manure to the field. "We're not only benefitting the soil -- half of this is grazing, and the manure from the cows will help with fertilizing the ground and adding more inputs into the soil," he says. "We're looking for more biodiversity in the soil profile. By trying different mixes of cover crops, we'll see what it'll do for the biology in the ground."

Cover crops also protect the soil from blowing away and losing moisture in between cash crops, adds Glen Edwards, chairman of the Ada Soil and Water Conservation District. "I've been doing that myself for years," he says.



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Even planting just turnips can help. "You're putting a lot of nitrogen back in the soil. Plus, you're holding the soil in place. You can get a lot of wind erosion in the winter if you don't have a cover crop in place," Edwards says.

Edwards has experimented with no-till farming using the rental drill, and he likes the results so far. He wasn't sure how the direct-seed drill would work on gravity-irrigated fields. And that hasn't been a problem. In one instance, he planted oats over the top of corn stalks, and the oats grew up as high as his chest. "It was heavy," he says. "I think I got a really good yield."

No-till, direct-seed farming will catch on more in southern Idaho as farmers see it in use by their neighbors. "People try it, and then their neighbor sees it, and they want to try it, too," Edwards says.

Gem County has a small direct-seed drill that's available to local producers, Malheur County, Oregon, has a drill for local producers, Minidoka and Cassia districts are planning on buying drills for local producers, and the Madison district bought a drill for local producers. "Almost every conservation district is trying to get a drill," says Winger. "There are innovators in every one of our counties, showing how it's done. The word is getting out."

Three direct-seed drills in Fremont and Madison counties allowed multiple producers to plant 3,772 acres to cover crops through the NRCS EQIP program in 2014, and another 1,000 acres were planted into cover crops by individual farmers acting on their own, Winger says. Statewide, there were 29 soil

health contracts through EQIP covering 8,900 acres, he said. "That number is going to keep going up."

After 20 years of no-till farming, Gabe Brown has seen his input costs continue to go down while his yields go up.

"Every acre of our cropland, and we have approximately 2,000 acres of cropland, has a cover crop growing before the cash crop, after the cash crop, or with the cash crop," Brown says in a YouTube video. "Our goal is to have a living root in the ground as long as possible.

"We haven't used synthetic fertilizer since 2008, we use no fungicide, no pesticide, we are using one herbicide every 2-3 years, and we're getting close to eliminating that also," he says.

Brown's corn yield is running 25 percent higher than the county average, without all the input costs he used to incur. "Our cost to produce a bushel of corn was \$1.42 per bushel," he says. "It all about the system, and thinking holistically. We're not in this to make the most profit this year. We're in it to regenerate our soils and long-term profitability."

These are the kinds of results that Idaho farmers should expect over the long haul, but it takes a long-term commitment, Winger and McIntyre point out. "You have to make at least a



Turnips can be a valuable part of cover crop mixes planted after harvest.

five-year commitment," McIntyre says. "Soil health is a journey," Winger adds. "This won't be solved overnight."

For more information:

- NRCS Soil Health resources: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health/>
- 6th annual Soil Health Symposium and Workshop, "Soil: Where Profit Takes Root" Feb. 12, 2015, 8 a.m. - 4:30 p.m. at the Four Rivers Cultural Center, Ontario, Oregon. Co-sponsored by the Payette, Malheur, Canyon and Adams SWCDs. Cover crop workshop from 8 a.m. to noon on Feb. 13. <http://www.payetteswcd.org/conservation-events/>
- Marlon Winger, NRCS state agronomist, at marlon.winger@id.usda.gov.

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